

Air Force Institute of Technology

Research Report 2008

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Graduate School of Engineering and Management

**GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT
AIR FORCE INSTITUTE OF TECHNOLOGY
WRIGHT-PATTERSON AIR FORCE BASE, OHIO**

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AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

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or visit the AFIT website: www.afit.edu



Air Force Institute of Technology Research Report 2008 Foreword

Research is the cornerstone of the dramatic advances in air, space, and cyber technology that underpin the nation's ability to meet the international and homeland security challenges of tomorrow. Research is also an integral part of graduate education, providing graduates with in-depth knowledge, critical thinking skills, and problem solving abilities. At the Air Force Institute of Technology (AFIT), our faculty and students engage in research with the goal of sustaining the technological supremacy of the United States Air Force (USAF) and the Department of Defense (DoD).

AFIT maintains active partnerships with our Air Force's organizations and operational communities as well as the DoD and other federal agencies to maximize the contributions of our research programs to national needs. Our faculty and students also engage in collaborations with researchers at universities throughout the nation to advance the state-of-the-art in a variety of disciplines. AFIT cooperates with commercial enterprises to ensure timely transfer of new technology to US industry through Cooperative Research and Development Agreements (CRADAs) whenever appropriate.

This Research Report is prepared annually to report on the significant contributions of this institution; to solicit continued involvement and support from our Air Force, DoD, and other federal partners; and to encourage new sponsors to participate in AFIT's research programs. AFIT welcomes new opportunities to engage in research projects that are of mutual interest to our customers, faculty, and students.

Heidi R. Ries, Ph.D.
Dean for Research
Graduate School of Engineering
and Management



Table of Contents

AIR FORCE INSTITUTE OF TECHNOLOGY	i
1. INTRODUCTION.....	1
1.1. OVERVIEW.....	1
1.2. THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT RESEARCH COLLABORATION.....	1
2. SPECIAL RECOGNITIONS.....	4
2.1. FACULTY FELLOWS.....	4
2.2. PROFESSIONAL CERTIFICATIONS.....	5
2.3. RESEARCH AWARDS	7
2.3.1. FACULTY.....	7
2.3.2. STUDENTS.....	8
3. RESEARCH STATISTICS.....	9
3.1. RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS.....	9
3.2. RESEARCH AND CONSULTING OUTPUT MEASURES.....	11
3.3. RESEARCH AND CONSULTING SPONSORSHIP.....	12
3.4. OUTSIDE FUNDING FOR THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT.....	14
4. SPONSORSHIP OF STUDENT RESEARCH	16
4.1. DOCTORAL DISSERTATIONS.....	16
4.1.1. HEADQUARTERS UNITED STATES AIR FORCE.....	16
4.1.2. AIR COMBAT COMMAND	16
4.1.3. AIR EDUCATION AND TRAINING COMMAND.....	16
4.1.4. AIR FORCE COMMUNICATIONS AGENCY.....	16
4.1.5. AIR FORCE RESEARCH LABORATORY.....	16
4.1.6. UNITED STATES CENTRAL COMMAND.....	18
4.1.7. UNITED STATES NAVAL ACADEMY.....	18
4.1.8. THE HIGH ENERGY LASER JOINT TECHNOLOGY OFFICE.....	18
4.2. MASTER'S THESES.....	19
4.2.1. OFFICE OF THE SECRETARY OF THE AIR FORCE	19
4.2.2. HEADQUARTERS UNITED STATES AIR FORCE.....	19
4.2.3. AIR COMBAT COMMAND	20
4.2.4. AIR EDUCATION AND TRAINING COMMAND.....	20
4.2.5. AIR FORCE MATERIEL COMMAND	23
4.2.6. AIR MOBILITY COMMAND.....	33
4.2.7. AIR FORCE SPACE COMMAND.....	33
4.2.8. USAF FIELD OPERATING AGENCIES	33
4.2.9. DEPARTMENT OF DEFENSE.....	34
4.2.10. DEPARTMENT OF ENERGY	36
4.2.11. OTHER FEDERAL AGENCIES.....	36
4.2.12. NON-FEDERAL SPONSORS	36
4.3. GRADUATE RESEARCH PAPERS.....	38
4.3.1. OFFICE OF THE SECRETARY OF THE AIR FORCE	38
4.3.2. HEADQUARTERS UNITED STATES AIR FORCE.....	38
4.3.3. AIR COMBAT COMMAND	38
4.3.4. AIR EDUCATION AND TRAINING COMMAND.....	38
4.3.5. AIR FORCE MATERIEL COMMAND	39
4.3.6. AIR MOBILITY COMMAND.....	40
4.3.7. AIR FORCE SPACE COMMAND.....	40
4.3.8. AIR FORCE RESERVE COMMAND	40
4.3.9. DEPARTMENT OF DEFENSE.....	40
5. ACADEMIC DEPARTMENT PUBLICATIONS AND FUNDING INFORMATION	41
5.1. DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS.....	42
5.2. DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING.....	58
5.3. DEPARTMENT OF ENGINEERING PHYSICS	90
5.4. DEPARTMENT OF MATHEMATICS AND STATISTICS	105
5.5. DEPARTMENT OF OPERATIONAL SCIENCES.....	111
5.6. DEPARTMENT OF SYSTEMS AND ENGINEERING MANAGEMENT	128

6.	RESEARCH CENTER PUBLICATIONS AND FUNDING INFORMATION.....	149
6.1.	ADVANCED NAVIGATION TECHNOLOGY CENTER	150
6.2.	CENTER FOR DIRECTED ENERGY	154
6.3.	CENTER FOR CYBERSPACE RESEARCH.....	158
6.4.	CENTER FOR MASINT STUDIES AND RESEARCH	167
6.5.	CENTER FOR OPERATIONAL ANALYSIS	170
6.6.	CENTER FOR SYSTEMS ENGINEERING.....	175
	APPENDICES.....	177
	APPENDIX A: FACULTY CREDENTIALS.....	177
	APPENDIX B: POST-DOCTORAL AND OTHER RESEARCH ASSOCIATES CREDENTIALS.....	206
	APPENDIX C: ABBREVIATIONS FOR ORGANIZATIONS	207
	APPENDIX D: INFORMATION FOR OBTAINING A COPY OF A THESIS	209

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1. INTRODUCTION

1.1. OVERVIEW

This Research Report presents the FY08 research statistics and contributions of the Graduate School of Engineering and Management (EN) at AFIT. AFIT research interests and faculty expertise cover a broad spectrum of technical areas related to USAF needs, as reflected by the range of topics addressed in the faculty and student publications listed in this report. In most cases, the research work reported herein is directly sponsored by one or more USAF, or DoD agencies.

AFIT welcomes the opportunity to conduct research on additional topics of interest to the USAF, DoD, and other federal organizations when adequate manpower and financial resources are available and/or provided by a sponsor. In addition, AFIT provides research collaboration and technology transfer benefits to the public through CRADAs. Interested individuals may discuss ideas for new research collaborations, potential CRADAs, or research proposals with individual faculty using the contact information in Appendix A or via the AFIT Directory at www.afit.edu/directory.

Additional information on the research programs at AFIT may also be found on the research web home page at <http://www.afit.edu/en/enr/>. The Office of Research and Sponsored Programs, Graduate School of Engineering and Management can be reached at 937-255-3633, (DSN 785-3633) or by email: research@afit.edu. The primary points of contact are Dr. Michael J. Caylor, Director of Sponsored Programs, 937-255-3636 x7104, DSN 785-3636 x7104 and Dr. Heidi R. Ries, Dean for Research, 937-255-3636 x4544, DSN 785-3636 x4544.

1.2. THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT RESEARCH COLLABORATION

As detailed in the 2008-2009 catalog at <http://www.afit.edu/en/ener/catalog.cfm>, AFIT offers Master's and Doctoral programs in a variety of disciplines through six departments: the Department of Mathematics and Statistics (ENC), the Department of Electrical and Computer Engineering (ENG), the Department of Engineering Physics (ENP), the Department of Operational Sciences (ENS), the Department of Systems and Engineering Management (ENV), and the Department of Aeronautics and Astronautics (ENY). In all of these disciplines, research is an integral component of graduate education, developing an individual student's skills and providing new knowledge of interest to many.

A brief listing of each department's research areas of emphasis appears below. Please contact the faculty, relevant departmental office, or the Office of Research and Sponsored Programs for further information, or visit the Graduate School of Engineering and Management departmental websites at www.afit.edu.

The [Department of Aeronautics and Astronautics](#) invites research topic proposals and collaborative suggestions for the Aeronautical, and Astronautical engineering programs. The following list highlights the Department's research specialties:

Aeroelasticity and Design Optimization
Aerospace Structures and Materials
Analysis of Computer Turbines
Autonomous Control of UAVs
Computational Fluid Dynamics
Control of High Performance Aircraft
Dynamic Flight Simulation
Experimental Fluid Dynamics
High Velocity Impact
Impact Dynamics
Inflatable Space Structures

Materials and Structural Analysis
Mechanics of Materials and Structures
Micro Air Vehicles
Non-Linear Dynamics
Reentry Dynamics
Rocket & Space Propulsion
Rotocraft Aeromechanics
Satellite Cluster Dynamics, Navigation, & Control
Spacecraft Dynamics & Control

The [Department of Electrical and Computer Engineering](#) invites research topic proposals and collaborative suggestions for the Electrical Engineering, Computer Engineering, and Computer Science programs, as well as the **Advanced Navigation Technology Center (ANT)** and the **Center for Cyberspace Research (CCR)**. The following list highlights the Department's research specialties:

Advanced Security-focused Computing Architectures
Artificial Intelligence
Automatic Target Recognition
Communications/Radar
Computer Communication Networks
Cyber Operations and Security
Electromagnetics/Low Observables
Evolutionary Algorithms

Guidance, Navigation and Control
Information Visualization
Micro and Nanosystems
Parallel and Distributed Processing
Signal and Image Processing
Software Engineering
Wireless Networks
Wireless Sensor Networks

The [Department of Engineering Physics](#) invites research topic proposals and collaborative suggestions for the Applied Physics, Nuclear Engineering, Electro-Optics (jointly operated with the Department of Electrical and Computer Engineering), and Materials Science (jointly operated with the Department of Aeronautics and Astronautics) programs, as well as the **Center for Directed Energy (CDE)** and the **Center for MASINT Studies and Research (CMSR)**. The following list highlights the Department's research specialties within these programs:

Combating Weapons of Mass Destruction
Computational Physics
Counterproliferation
Directed Energy Weapons
Electronic and Photonic Materials

Lasers and Electro-Optics
Nuclear Weapons and Effects
Nuclear Forensics
Remote Sensing and Signature Analysis
Space Weather

The [Department of Mathematics and Statistics](#) invites research topic proposals and collaborative suggestions for the following research specialties:

Acoustic Wave Scattering
Category Theory
Optimization
Design of Experiments
Electromagnetics
Gait Recognition

Information Fusion
Multiscale Methods
Functional Analysis
Numerical Analysis
Partial Differential Equations
Wavelets

The [Department of Operational Sciences](#) invites research topic proposals and collaborative suggestions within the areas of Operations Research, Logistics Management programs, as well as the **Center for Operational Analysis (COA)**. The following list highlights the Department's research specialties:

Applied/Multivariate Statistics
Capacity and Queue Modeling
Decision and Risk Analysis
Information Operations/Information Warfare
Inventory Management/Theory
Math Programming and Optimization
Network Modeling

Operational Modeling and Simulation
Operational Problems and Heuristic Modeling
Sensor/Classifier Fusion
Space and International Logistics
Space Logistics Modeling
Stochastic Systems Analysis
Supply Chain Management

The [Department of Systems and Engineering Management](#) is seeking research topic proposals and collaborative suggestions for the Cost Analysis, Engineering Management, Environmental Engineering and Science, Information Resource Management, Research and Development Management programs, as well as the **Center for Systems Engineering (CSE)**. The following list highlights the Department's research specialties:

Applied Environmental Sciences	Knowledge and Strategic Information Management
Cost Analysis	Leadership and Management
Crisis Project Management	Multidisciplinary Distributed Cognition
Crisis Engineering Services Management	Nanotoxicity and Pharmacokinetic Modeling
Crisis Knowledge Management	Operational Information Integration
Cyberlaw and Cyberwar	Organizational Change and Theory
Defense Product Development	Organizational Control Center Performance
Ecological Engineering – Constructed Wetlands	Sustainable Development
Economics and Finance	System Dynamics Analysis
Facility and Infrastructure Management	Systems Engineering
Information Assurance and Security	Technology Development and Application

Another avenue for educational and research collaboration with the Graduate School of Engineering and Management is through association with one or more of **AFIT's Research Centers**. A brief listing of each Center's educational or research areas of emphasis appears below. Please contact the Centers directly (see Ch. 6), or contact the Office of Research and Sponsored Programs for further information (937-255-3633, DSN 785-3633).

The [Advanced Navigation Technology \(ANT\) Center](#) is a forward-looking navigation research center seeking to identify and solve tomorrow's most challenging navigation and targeting problems by focusing on three research thrusts: multiple-vehicle autonomous navigation and control, non-GPS precision navigation, and robust GPS navigation.

The [Center for Directed Energy \(CDE\)](#) is dedicated to Air Force and DoD research in high energy lasers (HEL), high power microwaves (HPM), and their enabling technologies. The Center is an advocate for transitioning these systems to the battlefield through vigorous scientific and engineering research, graduate education programs and diverse consulting activities.

The [Center for Cyberspace Research \(CCR\)](#) is one of the National Security Agency (NSA) and Department of Homeland Security's designated Centers of Academic Excellence in Information Assurance Education (CAE/IAE). CCR is also a National Science Foundation Cyber Corp institution. CCR's objectives are to provide cutting-edge offensive and defensive research solutions for cyberspace and cyber security applications and produce a cadre of technically educated leaders for the DoD and federal Government. In June 2008, the CCR was designated the Air Force's Cyberspace Technical Center of Excellence.

The [Center for MASINT Studies and Research \(CMSR\)](#) is focused on Air Force and Department of Defense Measurement and Signature Intelligence (MASINT) scientific, technical and operational activities through graduate research programs. CMSR is a national resource for educating a new generation of MASINT professionals.

The [Center for Operational Analysis \(COA\)](#) directs defense relevant research and timely technology transfer in providing approaches and solutions to current and future operational and resource issues while developing critical and forward thinking analysts, managers, and leaders.

The [Air Force Center for Systems Engineering \(AF CSE\)](#) is a directorate within AFIT and is the recognized Center of Excellence for Systems Engineering (SE) within the Air Force (AF) and the US Department of Defense (DoD). The mission of the Center is to shape the future of systems engineering with the goal of improving our ability to deliver war-fighting capabilities. We accomplish this by conceptualizing new processes, practices, tools, and resources through research, education, and consultation.

2. SPECIAL RECOGNITIONS

2.1. FACULTY FELLOWS

Badiru, Adedeji B., Professor and Head Department of Systems and Engineering Management, Fellow of the Institute of Industrial Engineers, Fellow of the Nigerian Academy of Engineering.

Bridgman, Charles J., Professor Emeritus of Nuclear Engineering, Department of Engineering Physics, Fellow of the American Nuclear Society.

Elrod, William E., Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of American Society of Mechanical Engineers International.

Franke, Milton E., Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers.

Hengehold, Robert L., Professor of Physics, Department of Engineering Physics, Fellow of the American Physical Society.

Houpis, Constantine H., Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Mall, Shankar, Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

Maybeck, Peter S., Professor Emeritus of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Pachter, Meir, Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Institute of Electrical and Electronic Engineers.

Palazotto, Anthony N., Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of American Institute of Aeronautics and Astronautics, Fellow of the American Academy of Mechanics and the American Society of Civil Engineers.

Perram, Glen P., Professor of Physics, Department of Engineering Physics, Fellow of the Directed Energy Professional Society.

Ruggles-Wrenn, Marina B., Associate Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, Fellow of the American Society of Mechanical Engineers International.

Soni, Som R., Associate Professor of Systems Engineering, Department of Systems and Engineering Management, Fellow of the American Society for Composites, Associate Fellow of AIAA.

Terzuoli, Andrew J., Associate Professor of Electrical Engineering, Department of Electrical and Computer Engineering, Fellow of the Electromagnetics Academy.

Thomas, M. U., Dean, Graduate School of Engineering and Management, Fellow of the Institute of Industrial Engineers, Fellow of the American Society of Quality, Fellow of the Institute for Operations Research and Management Sciences.

Torvik, Peter J., Professor Emeritus of Aerospace Engineering and Engineering Mechanics, Department of Aeronautics and Astronautics, Fellow of the American Institute of Aeronautics and Astronautics, Life Fellow of American Society of Mechanical Engineers International, Fellow of the Ohio Academy of Science.

2.2. PROFESSIONAL CERTIFICATIONS

Badiru, Adedeji B., Leadership Certificate, University of Tennessee Leadership Institute

Badiru, Adedeji B., Professional Engineer, State of Oklahoma

Baldwin, Rusty O., Professional Engineer, State of Ohio

Baldwin, Rusty O., Certified Information Systems Security Professional (CISSP)

Barelka, Alex J., Certified Project Management Professional (PMP)

Carl, Joseph W., Professional Engineer, State of Ohio; Certified Systems Engineering Professional (CSEP) by INCOSE

Coutu, Ronald A., Jr., Professional Engineer, State of California

Cunningham, William A. III, Certified Transportation and Logistics (CTL) by the American Society of Transportation and Logistics (AST&L)

Goltz, Mark N., Hazardous Waste Management Specialty Certification as a Diplomate Environmental Engineer, American Academy of Environmental Engineers

Goltz, Mark N., Professional Engineer, State of Minnesota

Goltz, Mark N., Board Certified Environmental Engineer, American Academy of Environmental Engineers

Greendyke, Robert B., Professional Engineer, State of Texas

Grimaila, Michael R., Certified Information Security Manager (CISM); Information Systems Audit and Control Association (ISACA); Rolling Meadows, IL.

Grimaila, Michael R., Certified Information System Security Professional (CISSP); International Information Systems Security Certification Consortium, Inc. (ISC)2; Vienna, VA.

Houpis, Constantine H., Professional Engineer, State of Ohio

Kunz, Donald L., Professional Engineer, Commonwealth of Virginia

Marciniak, Michael A., Certified Laser Safety Officer, Board of Laser Safety, Orlando, FL

Mattioda, Daniel D., FAA Airframe and Powerplant License

Mattioda, Daniel D., FCC Ground Radio Operators License with Radar Endorsement

Mullins, Barry E., Professional Engineer, State of Colorado

Mullins, Barry E., Security Essential Certification (GSEC) from SysAdmin, Audit, Network, Security Institute's (SANS) Global Information Assurance Certification (GIAC) Program

Mullins, Barry E., Assessing Wireless Networks (GAWN) certification from the SysAdmin, Audit, Network, Security Institute's (SANS) Global Information Assurance Certification (GIAC) Program

Palazotto, Anthony N., Professional Engineer, State of Ohio

Perram, Glen P., Professional Engineer, State of Ohio

Quinn, Dennis W., Professional Engineer, State of Ohio

Reeder, Mark F., Professional Engineer, State of Ohio

Slagley, Jeremy, Board Certified Industrial Hygienist, American Academy of Industrial Hygienists

Strouble, Dennis D., Licensed Attorney, State of Texas

Thomas, M. U., Professional Engineer, State of Michigan

Turner, Jason M., Certified Usability Analyst (CUA) - Human Factors International; Certified Enterprise Architect (CEA) - Federal Enterprise Architecture Certification Institute

2.3. RESEARCH AWARDS

2.3.1. FACULTY

CUSUMANO, SALVATORE, J.

Bartell, R.J., Krizo, M.J., Fiorino, S.T. Air Force Modeling and Simulation Planning Award for 2007, presented to the AFIT Center for Directed Energy M&S Team, accepted 12 March 2008.

DEA, JOHN R., Maj

2008 Warren Randolph Church Award for Excellence in Mathematics, Naval Postgraduate School, Monterey, CA.

Air Force Association Award for Outstanding U.S. Air Force Student, Summer 2008, Naval Postgraduate School, Monterey, CA.

FIORINO, STEVEN, T., Lt Col

Bartell, R.J., Krizo, M.J., Fiorino, S.T. Air Force Modeling and Simulation Planning Award for 2007, presented to the AFIT Center for Directed Energy M&S Team, accepted 12 March 2008.

HOPKINSON, KENNETH M.

Hopkinson, K., and Graham, S., "Connecting the Warfighter: Moving from Today's Crude Bent Pipes to the Tactical Battle Systems of the Future," Air University Blue Dart Award for Opinion/Editorial Article, February 2008.

MARTIN, RICHARD K.

HKN (Eta Kappa Nu, Delta Xi Chapter) Instructor of the Year, March 2008.

PETERSON, GILBERT L.

Air Force Junior Scientist of the Year, September 2008.

RAINES, RICHARD A.

Air Force Science and Engineering Educator of the Year, September 2008.

Inducted into the Association of the Old Crows Hall of Fame for significant contributions towards the advancement of Information Operations, October 2007.

RAQUET, JOHN F.

Nielsen, M., J. Raquet, M. Veth, and M. Pachter, Best-presentation-in-session award, "Development and Flight Test of a Robust Optical-Inertial Navigation System Using Low-Cost Sensors," *Proceedings of ION GNSS-2008*, Savannah, GA, Sep 2008.

Ozdemir, H., J. Raquet, and G. Lamont, Best-presentation-in-session award, "Design of a Regional Satellite Navigation System Constellation Using Genetic Algorithms," *Proceedings of ION GNSS-2008*, Savannah, GA, Sep 2008.

Highlighted in "50+ Leaders to Watch" article in *GPS World*, May 2008.

2.3.2. STUDENTS

GALLUP, HEATHER L.

Lt. Edwin E. Aldrin Sr. Award, March 2008.

HELLESEN, DENZIL L.

Secretary James G. Roche Award, March 2008.

JOHNSON, ROBERT J.

Commandant's Award, 2008.

MURPHY, SEAN D.

Lt. Edwin E. Aldrin Sr. Award, June 2008.

PETTUS, EVAN L.

Mervin E. Gross Award, June 2008.

RUSNOCK, CHRISTINA F.

Mervin E. Gross Award, March 2008.

SKARDA, BRYAN E.

Skarda, B., Mills, R.F., McDonald, J.T., and Strouble, D., Best Student Paper: Concepts, Theory, and Policy Track, "Operationalizing Social Engineering for Offensive Cyber Operations," 13th International Command and Control Research and Technology Symposium (ICCRTS), Bellevue WA, June 2008.

SOLIMAN, NEIL S.

MASINT Association Award for Academic Excellence Award, March 2008.

Association of Old Crows Academic Research Excellence Award, March 2008.

SUSKI, WILLIAM C., II

ATIA Academic Research Excellence Award, Advanced Technical Intelligence Association (ATIA), March 2008.

SWEENEY, DANIEL D.

Sweeney, D.D., and J.M. Slagley. "Noise and Dust Control in Simulated Coal Mine Longwall Shearer Operation." Poster Presentation at the American Industrial Hygiene Conference and Exposition, Minneapolis, MN, June 08. Awarded best student poster by AIHA Engineering Technology Committee.

WICKERT, DOUGLAS P.

Douglas Wickert (Robert Canfield, advisor), Best Presentation Award, Structures, 33rd AIAA Dayton-Cincinnati Aerospace Sciences Symposium, March 4, 2008.

3. RESEARCH STATISTICS

3.1. RESEARCH ASSESSMENT QUESTIONNAIRE RESULTS

An AFIT Research Assessment Questionnaire, shown on the following page, was sent to each sponsor of a Master's thesis and doctoral dissertation project during FY 2008 to determine the project's contribution, significance and cost avoidance. Detailed results of the questions asked are shown in Table 3.1. The data in this table are based on 63 questionnaires returned out of the 286 questionnaires mailed.

Table 3.1: Sponsor Assessment of AFIT Research

QUESTION	EN
Did this research contribute to a current Air Force/DoD project? (Yes answers)	98%
The thesis work was: Highly significant Significant Slightly significant Not significant	33% 56% 11% 0%
Average man-years of effort saved by the sponsors.	.96
Average cost avoided per thesis/dissertation by the sponsors.	\$165,104
Total cost avoided for all theses and dissertations sponsored (estimated).	\$47 M
Rank of respondents Colonel (DR IV/GM-15) Lt Col (DR-III/GM-14) Major (DR-II/GM-13) Of the 63 questionnaires, 37 respondents did not list Rank/GS levels. These percentages represent only those which responded.	22% 39% 39%



RESEARCH ASSESSMENT QUESTIONNAIRE

TO:

Thank you for sponsoring the AFIT thesis or dissertation listed below. AFIT is working hard to keep its research focused on defense technologies of interest to the Air Force and to the nation.

Title:

Student Author: Designator:

Faculty Advisor:

Date of Graduation:

Please help us determine the value and contribution of this research to your organization's mission by answering the questions below:

1. Did this research contribute to a current task or goal of interest to your organization? Y / N
2. Would you have completed this work if AFIT had not done it? Y / N
3. Regardless of your answers above, how would you rate this work? Highly significant
 Significant
 Slightly significant
 No significance
4. If AFIT had not done this work, please estimate what it would have cost your organization to perform it, either by using in-house resources or by contract. Man-Years ____ \$ _____

Please note that typically an MS thesis requires 0.5MY of the student's time and one month of the faculty advisor's time. For a PhD dissertation the numbers are 2MY for the student and 4 months for the advisor.

5. Would you like to make any remarks? (These will be shared with the academic department and the faculty chairperson.) (If necessary, please continue on reverse side.)

You may mail this to AFIT/ENR, 2950 Hobson Way, Wright-Patterson AFB OH 45433-7765, or fax it to 937-656-7139 (DSN 986-7139), or just e-mail your answers (only) to 1 to 5 to research@afit.edu
If you use e-mail, please include the designator above so that we might identify the project.

Thank you.

Name of Evaluator Office Symbol

Grade/Rank of Evaluator

3.2. RESEARCH AND CONSULTING OUTPUT MEASURES

There are measurable indicators of AFIT's contribution to the engineering and scientific community and AFIT's success in staying well informed of technical possibilities and scientific opportunities. These indicators include the number and quality of technical publications accepted by the editors of journals; the number of presentations accepted for regional, national and international conferences; the number of research projects conducted; the number of consultations performed for Air Force and DoD customers; and finally, the number of student graduate research papers, MS theses, and PhD dissertations completed and submitted to the Defense Technical Information Center. For FY08, these output measures are shown in Table 3.2.

Table 3.2: Faculty Research and Sponsored Programs Output by Graduate School Department

	Graduate School (EN) Total	Graduate School by Department					
		Math & Stats (ENC)	Electrical & Comp Eng (ENG)	Engineering Physics (ENP)	Operational Sciences (ENS)	Sys & Eng Management (ENV)	Aeronautics & Astro (ENY)
Number of Faculty (FTE)	134	15	34	20	21	24	20
Refereed Publications	171	8	48	23	20	24	48
Refereed Conferences	247	5	96	19	33	48	46
Other Presentations and Publications	276	37	70	57	35	61	16
Sponsor Funded Projects	172	4	67	42	11	12	36
Substantial Consultations	63	3	25	8	6	14	7
Books	6	0	3	0	2	1	0
Chapters of Books	15	0	13	0	2	0	0
Patents	0	0	0	0	0	0	0
Doctoral Dissertations Advised	34	0	14	6	5	1	8
Master's Theses Advised	277	9	73	21	30	92	61
Graduate Research Papers Advised	44	0	10	0	24	10	0

FTE: Full-time equivalent

3.3. RESEARCH AND CONSULTING SPONSORSHIP

As part of an Air Force institution, the faculty members of the Air Force Institute of Technology focus their research on current problems as well as future systems of the Air Force and other DoD organizations. Evidence of this focus is that 88% of technical and 86% of all theses and dissertations listed in Table 3.2 are externally sponsored by Air Force, DoD and Government agencies. In addition, most of the research projects and consultations are carried out for Air Force and DoD units. The data are summarized in Table 3.3 and Figure 3.1.

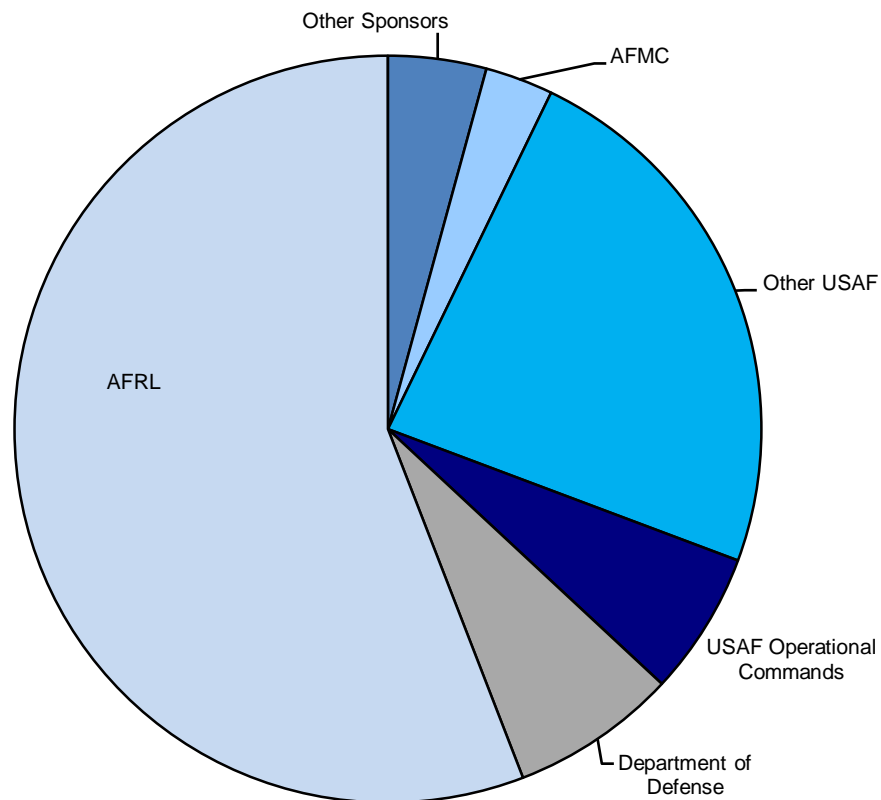


Figure 3.1: Sponsors of AFIT Theses and Dissertations

Table 3.3: AFIT External Sponsorship by Organization

SPONSOR ORGANIZATION	PhD Dissertations	Master's Theses	Graduate Research Papers	Funded Projects	Substantial Consultations
HQ UNITED STATES AIR FORCE	1	12	5		6
OFFICE OF THE SECRETARY OF THE AIR FORCE		3	1	6	1
AIR EDUCATION AND TRAINING COMMAND		6	1		
AIR COMBAT COMMAND	1	3	4	6	3
8 th Air Force		2	1		
National Air and Space Intelligence Center		4		4	4
AIR FORCE MATERIEL COMMAND		7	2	6	
Aeronautical Systems Center		6	3		4
Air Force Research Laboratory (AFRL)		1			4
Air Force Office of Scientific Research (AFOSR)	6	22		27	2
Air Vehicles Directorate (RB)	1	19		16	
Directed Energy Directorate (RD)	1	6		10	1
Human Effectiveness Directorate (RH)		14	2	4	
Information Directorate (RI)	2	3	1	3	2
Materials & Manufacturing Directorate (RX)	3	4		6	
Munitions Directorate (RW)		6		6	
Propulsion Directorate (RZ)	4	21		5	
Sensors Directorate (RY)	5	44		21	4
Space Vehicles Directorate (RV)	1	5		2	2
AIR FORCE RESERVE COMMAND			3	1	
AIR FORCE SPACE COMMAND		4	1		3
AIR MOBILITY COMMAND		1	10		
US AIR FORCE OPERATING AGENCIES					
Air Force Center for Environmental Excellence		5			
Air Force Civil Engineer Support Agency		2			
Air Force Communications Agency	1			1	
Air Force Information Operations Center		4		1	
Air Force Test Pilot School		2		1	
Air Force Technical Application Center				1	2
Other Operating Agencies		5			
DEPARTMENT OF HOMELAND SECURITY		2		1	
DEPARTMENT OF DEFENSE		10	3	3	10
Defense Threat Reduction Agency				3	1
High Energy Laser Joint Technology Office		1		4	
US Office of Secretary Defense		1			2
US Central Command	1	1			
US Strategic Command		2			1
US Transportation Command				1	
United States Army				1	1
United States Navy	1	1		1	
DEPARTMENT OF ENERGY		5		1	1
OTHER FEDERAL AGENCIES	1				4
Environmental Protection Agency		1			
National Aeronautics and Space Administration				1	
National Geospatial Intelligence Agency				2	
National Security Agency				4	
NATIONAL SCIENCE FOUNDATION				2	
DAYTON AREA GRADUATE STUDIES INSTITUTE				2	
Other Non-Federal Agencies		5		1	5
TOTALS					
	29	240	37	154	63

NOTE: Some student publications have multiple sponsors; See App C for Selected Acronym List

3.4. OUTSIDE FUNDING FOR THE GRADUATE SCHOOL OF ENGINEERING AND MANAGEMENT

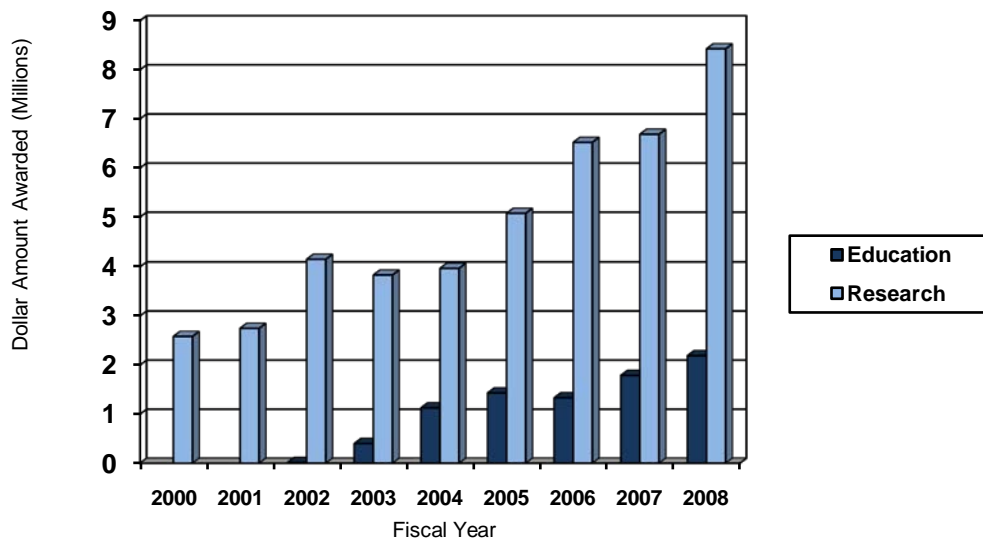
Many of the Graduate School of Engineering and Management's theses and research projects completed under faculty supervision (sponsored or unsponsored) are funded in part by other Air Force, DoD and government units and agencies. Often, this funding results from collaboration between faculty and thesis sponsors and occurs when the research project can be leveraged by the purchase of equipment or services not otherwise available. Tables 3.4 and 3.5, and Figure 3.3, summarize outside funding for FY08, and Figure 3.2 summarizes the past nine fiscal years of outside sponsored funding.

Table 3.4 FY08 Funding to Academic Departments & Research Centers by Type (\$ 1,000's)		Newly Awarded Research Projects		Newly Awarded Education Projects		Additional Research Expenditures	Total FY08 Sponsored Activity	
Department	#	\$k	#	\$k		\$k	#	\$k
Mathematics & Statistics (ENC)	4	92	-	-		13	4	105
Electrical & Computer Eng (ENG)	61	2,924	6	1,241		4,162	67	8,327
Engineering Physics (ENP)	38	2,837	4	890		1,352	42	5,079
Research & Sponsored Programs (ENR)	1	10	-	-		5	1	15
Operational Sciences (ENS)	11	1,000	-	-		455	11	1,455
Systems and Eng Management (ENV)	11	605	1	60		689	12	1,354
Aeronautical & Astronautical Eng (ENY)	36	958	-	-		3,224	36	4,182
TOTAL	162	8,426	11	2,191		9,900	173	20,517

Center	#	\$k	#	\$k		\$k	#	\$k
Advanced Navigation Technology (ANT)	18	828	-	-		638	18	1,466
Center for Directed Energy (CDE)	19	1,756	1	51		458	20	2,265
Center for Cyberspace Research (CCR)	15	765	6	1,241		804	21	2,810
Center for MASINT Studies and Research (CMSR)	7	493	1	756		264	8	1,513
Center for Operational Analysis (COA)	9	1,047	-	-		326	9	1,373
Center for Systems Engineering (CSE)	7	497	1	60		360	8	917
TOTAL	75	5,386	9	2,108		2,850	84	10,344

Notes: DoD regulations limit AFIT's charges to DoD organizations. These nonchargeable items are reflected as "additional research expenditures". All Center funds are also included in departmental funding.

Figure 3.2: New Award History FY00-FY08



* Pie chart on the right shows breakdown by AFRL Directorate.

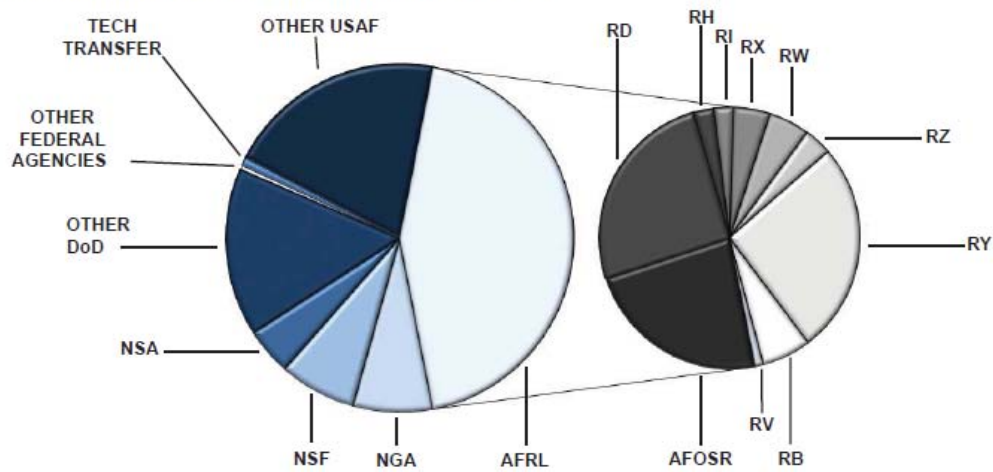


Figure 3.3 New FY08 Awards by Sponsor

Table 3.5 New FY08 Awards to Academic Departments & Research Centers by Sponsor

	<i>AFRL</i>	<i>Other USAF</i>	<i>Other DoD</i>	<i>NGA</i>	<i>NSF</i>	<i>NSA</i>	<i>Other Federal</i>	<i>Non-Federal</i>	<i>Total</i>
Dept.	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
ENC	92,277	-	-	-	-	-	-	-	92,277
ENG	2,036,616	713,738	409,349	30,000	528,424	447,412	-	-	4,165,539
ENP	948,573	548,736	1,134,320	756,000	230,000	-	29,209	44,308	3,727,146
ENR	10,000	-	-	-	-	-	-	-	10,000
ENS	66,500	316,293	596,970	-	-	20,000	-	-	999,763
ENV	145,000	481,692	30,385	-	-	-	7,700	-	664,777
ENY	794,615	109,634	15,000	-	-	-	-	38,860	958,109
TOTAL	4,129,851	2,170,093	2,186,024	786,000	758,424	467,412	36,909	83,168	10,617,611
Research Center	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>
ANT	752,491	45,900	-	30,000	-	-	-	-	828,391
CCR	637,075	94,530	298,549	-	528,424	447,412	-	-	2,005,990
CDE	806,787	9,000	761,055	-	230,000	-	-	-	1,806,842
CMSR	-	434,736	14,000	756,000	-	-	-	44,308	1,249,044
COA	59,500	279,293	707,770	-	-	-	-	-	1,046,563
CSE	55,000	159,552	322,140	-	-	-	-	20,160	556,852
TOTAL	2,310,853	1,023,011	2,103,514	786,000	758,424	447,412	-	64,468	7,493,682

Note: All Center funds are also included in departmental funding.

4. SPONSORSHIP OF STUDENT RESEARCH

4.1. DOCTORAL DISSERTATIONS

4.1.1. HEADQUARTERS UNITED STATES AIR FORCE

RODRIGUEZ, JUNE F.D., *Metamodeling Techniques to Aid in the Aggregation Process of Large Hierarchical Simulation Models*. AFIT/DS/ENS/08-03. Faculty Advisor: Dr. John O. Miller. Sponsor: HQ USAF.

4.1.2. AIR COMBAT COMMAND

FRIEND, MARK A., *Combat Identification with Synthetic Aperture Radar, Out-Of-Library Identification and Non-Declarations*. AFIT/DS/ENS/07-04. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: AFOSR and ACC.

4.1.3. AIR EDUCATION AND TRAINING COMMAND

AIR FORCE INSTITUTE OF TECHNOLOGY

Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

FORD, THOMAS C., *Interoperability Measurement*. AFIT/DSE/ENV/08-S01. Faculty Advisor: Dr. John M. Colombi. Sponsor: N/A.

HUBENKO, VICTOR P., *A Secure and Efficient Communications Architecture for Global Information Grid Users Via Cooperating Space Assets*. AFIT/DCE/ENG/08-02. Faculty Advisor: Dr. Richard A. Raines. Sponsor: N/A.

JOHNSON, STEVEN E., *Range Precision of LADAR Systems*. AFIT/DEE/ENG/08-15. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

PHILLIPS, JAMES D., *Joint Image and Pupil Plane Reconstruction Algorithm based on Bayesian Techniques*. AFIT/DEE/ENG/08-07. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

PRINS, NICHOLAS J., *Distribution Iteration: A Robust Alternative to Source Iteration for Solving the Discrete Ordinates Radiation Transport Equations in Slab and XY-Geometries*. AFIT/DS/ENP/08-S04. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.

VENEMA, TODD M., *Closed-Loop Adaptive Optics Control in Strong Atmospheric Turbulence*. AFIT/DEE/ENG/08-21. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: N/A.

4.1.4. AIR FORCE COMMUNICATIONS AGENCY

AUGERI, CHRISTOPHER J., *On Graph Isomorphism and the Page Rank Algorithm*. AFIT/DCS/ENG/08-08. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA.

4.1.5. AIR FORCE RESEARCH LABORATORY

AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

FRIEND, MARK A., *Combat Identification with Synthetic Aperture Radar, Out-Of-Library Identification and Non-Declarations*. AFIT/DS/ENS/07-04. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: AFOSR and ACC.

KEE, PATRICK, *Electronic State Distributions of YBa₂Cu₃O_{7-x} Laser Ablated Plumes*. AFIT/DSP/ENP/08-S05. Faculty Advisor: Dr. Glen P. Perram. Sponsor: AFOSR.

LEAP, NATHAN J., *A Confidence Paradigm for Classification Systems*. AFIT/DS/ENS/08-02. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: AFOSR.

MCCLORY, JOHN W., *The Effect of Radiation on the Electrical Properties of Aluminum Gallium Nitride/Gallium Nitride Heterostructures*. AFIT/DS/ENP/08-01. Faculty Advisor: Dr. James C. Petrosky. Sponsor: AFOSR and AFRL/RV.

MCCLUNG, AMBER J.W., *Extension of Viscoplasticity Based on Overstress to Capture the Effects of Prior Aging on the Time Dependent Deformation Behavior of a High-Temperature Polymer: Experiments and Modeling*. AFIT/DS/ENY/08-D15. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFOSR.

MOORE, ELIZABETH A., *Electrical Activation Studies of Silicon Implanted Aluminum Gallium Nitride with High Aluminum Mole Fraction*. AFIT/DS/ENP/08-D01. Faculty Advisor: Dr. Yung Kee Yeo. Sponsor: AFOSR.

AFRL: AIR VEHICLES DIRECTORATE

LARSON, REID A., *A Novel Method Characterizing the Impact Response of Functionally Graded Plates*. AFIT/DS/ENY/08-06. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RB.

AFRL: DIRECTED ENERGY DIRECTORATE

LEMASTER, DANIEL A., *Statistical Methods for Polarimetric Imagery*. AFIT/DEE/ENG/08-18. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/RD.

AFRL: INFORMATION DIRECTORATE

RODRIGUEZ, BENJAMIN M., II, *JPEG Steganography Embedding Methods*. AFIT/DEE/ENG/08-20. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RI.

SAMBORA, MATTHEW D., *Statistical Methods for Image Registration and Denoising*. AFIT/DCE/ENG/08-14. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/RI.

AFRL: MATERIALS AND MANUFACTURING DIRECTORATE

COLE, WALTER P., *Atmospheric Turbulence Effects Correction Factors for the Laser Range Equation*. AFIT/DS/ENP/08-02. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.

KADING, GLEN A., *Piezo-Electrochemical Transducer Effect Intercalated Graphite Micro-Electromechanical Actuators*. AFIT/DEE/ENG/08-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RX.

YELESER, TUFAN, *Creep Behavior of Oxide/Oxide Composites with Monazite Fiber Coating at 1100°C in Air and in Steam Environments*. AFIT/GA/ENY/08-S01. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RX.

AFRL: PROPULSION DIRECTORATE

DOSTER, JASON C., *Hypermixer Pylon Fuel Injection for Scramjet Combustors*. AFIT/DS/ENY/08-02. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

FREEBORN, ANDREW B., *Pylon Effects on a Scramjet Cavity Flameholder Flowfield*. AFIT/DS/ENY/08-04. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

HOPPER, DAVID R., *Direct Initiation of Multiple Tubes by Detonation Branching in a Pulsed Detonation Engine*. AFIT/DS/ENY/08-05. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

REED, SHAD A., *Development of Experimental, Analytical, and Numerical Approximations Appropriate for Nonlinear Damping Coatings*. AFIT/DS/ENY/08-01. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RZ.

AFRL: SENSORS DIRECTORATE

BEARD, TODD W., *Application of Optimization Techniques to Spectrally Modulated, Spectrally Encoded Waveform Design*. AFIT/DEE/ENG/08-16. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/RY.

COUSIN, KEVIN, *A Unified Framework for Solving Multiagent Task Assignment Problems*. AFIT/DCS/ENG/08-01. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RY.

GIRARD, JASON A., *Material Perturbations to Enhance Performance of the Theile Half-Width Leaky Mode Antenna*. AFIT/DEE/ENG/08-04. Faculty Advisor: Dr. Michael J. Havrilla. Sponsor: AFRL/RY.

MARSH, DAVID W., *Composable Distributed Access Control and Integrity Policies for Query-Based Wireless Sensor Networks*. AFIT/DEE/ENG/08-06. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RY.

TURNER, REGINALD J., *A Wide Area Bipolar Cascade Resonant Cavity Light Emitting Diode for a Hybrid Range Intensity*. AFIT/DEE/ENG/08-12. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RY.

AFRL: SPACE VEHICLES DIRECTORATE

McCLORY, JOHN W., *The Effect of Radiation on the Electrical Properties of Aluminum Gallium Nitride/Gallium Nitride Heterostructures*. AFIT/DS/ENP/08-01. Faculty Advisor: Dr. James C. Petrosky. Sponsor: AFOSR and AFRL/RV.

4.1.6. UNITED STATES CENTRAL COMMAND

ARTELLI, MICHAEL J., *Modeling and Analysis of Resolve and Morale for the "Long War"*. AFIT/DS/ENS/07-02. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: US CENTCOM.

4.1.7. UNITED STATES NAVAL ACADEMY

STEVENS, ROBERT E., *Optimal Control of Electrodynamic Tethers*. AFIT/DS/ENY/08-13. Faculty Advisor: Dr. William E. Wiesel. Sponsor: USNA.

4.1.8. THE HIGH ENERGY LASER JOINT TECHNOLOGY OFFICE

MASSEY, STEVEN M., *Simulated Brillouin Scattering Phase Conjugation in Fiber Optic Waveguides*. AFIT/DS/ENP/08-S03. Faculty Advisor: Maj Timothy H. Russell. Sponsor: HEL-JTO.

4.2. MASTER'S THESES

4.2.1. OFFICE OF THE SECRETARY OF THE AIR FORCE

CHAUSSE, JEAN P., *Impact of Language Immersion Programs on Foreign Language*. AFIT/GRD/ENV/08-M02. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: SAF and AF/A1.

FRUGÉ, JOHN W., *Comparing Information Assurance Awareness Training for End-Users: A Content Analysis Examination of Air Force and Defense Information Systems Agency User Training Modules*. AFIT/GIR/ENV/08-M07. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: SAF/XC.

KIM, SE YOUNG, *A Case Analysis of Explaining the Main Factors that Contribute to ROK'S Decision Making in Procurement of Defense Articles*. AFIT/GLM/ENS/08-14. Faculty Advisor: Lt Col Stanley E. Griffis. Sponsor: SAF/IA.

4.2.2. HEADQUARTERS UNITED STATES AIR FORCE

CHAUSSE, JEAN P., *Impact of Language Immersion Programs on Foreign Language*. AFIT/GRD/ENV/08-M02. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: SAF and AF/A1.

CORBIN, REBECCA S., *An Analysis of Groundwater Flow Patterns in a Constructed Treatment Wetland Cell*. AFIT/GEM/ENV/08-M04. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF/A7 and AFCEE.

CULLEN, ANDREW J., *A Multi-Objective Linear Program Model to Test Hub-and-Spoke Networks as a Potential Air Force Deployment Alternative*. AFIT/GEM/ENS/08-M01. Faculty Advisor: Dr. James T. Moore. Sponsor: AFOSR/NM and AF/A7.

DURAND, JEFFREY M., *Aircraft Maintenance Organizational Structure Changes An Antecedent Model*. AFIT/GLM/ENS/08-1. Faculty Advisor: Dr. Jeffrey A. Odgen. Sponsor: Logistics Transformation Office.

HAWKINS, LESLIE S., *Micro-Etched Platforms for Thermal Inactivation of Bacillus Anthracis and Bacillus Thuringiensis Spores*. AFIT/GWM/ENP/08-M01. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AF/A3S and AFNWCA(AT).

MAIN, BRYAN D., *Analytical Techniques and the Air Force Logistics Readiness Officer*. AFIT/GLM/ENS/08-9. Faculty Advisor: Dr. William A. Cunningham. Sponsor: AF/A4I.

NIELSEN, TYLER K., *Characterization Patterns of MILCON Project Contract Modifications*. AFIT/GEM/ENV/07-D01. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AF/IL.

PONACK, RYAN S., *Assessing Capabilities of the High Energy Liquid Laser Area Defense System Through Combat Simulations*. AFIT/GOR/ENS/08-18. Faculty Advisor: Dr. John O. Miller. Sponsor: AF/A9.

SEAMAN, GREGORY G., *Optimization of Therapeutic Strategies for Organophosphate Poisoning*. AFIT/GES/ENV/08-M06. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF Surgeon General and Joint Program Executive Office for Chemical and Biological Defense.

STRACHAN, ELISE V., *Governance Structure Transformation During ERP Implementations*. AFIT/GLM/ENS/08-12. Faculty Advisor: Dr. Jeffrey A. Odgen. Sponsor: AF Logistics Transformation Office.

THOMPSON, IAN F., *Oxygenation of the Root Zone and TCE Remediation: A Plant Model of Rhizosphere Dynamics*. AFIT/GES/ENV/08-M07. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF/A7 and AFCEE/ERD.

YESUÉ, ELIZABETH A., *A Cocitation Analysis of Crisis Management Literature*. AFIT/GEM/ENV/08-M01. Lt Col Christopher J. West. Sponsor: AF/A7.

4.2.3. AIR COMBAT COMMAND

KRETZER, MICHAEL P., *Modeling Predator MQ-1 Logistics*. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: ACC/432 AMXS.

ROSNER, JAMES W., *An Analysis of the Design-Build Delivery Method in Air Force Military Construction*. AFIT/GEM/ENV/08-M16. Faculty Advisor: Lt Col Christopher J. West. Sponsor: AFMC MSO/A7M and ACC/CCTT.

VILLARREAL, VAUGHN A., *Near Real-Time Battle Damage Assessment*. AFIT/GAE/ENV/08-J07. Faculty Advisor: Dr. David R. Jacques. Sponsor: 86th FWS.

8th AIR FORCE

KIM, TAE HO, *Combat Identification Modeling Using Robust Optimization Techniques*. AFIT/GOR/ENS/08-11. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: AF/A8SI.

WILLIAMSON, DEREK L., *Inland Resupply Without a Road or Runway: Airdrop Solutions Including High-Altitude Precision Systems*. AFIT/GLM/ENS/08-15. Faculty Advisor: Maj Shane N. Hall. Sponsor: AFOSR/NM and AF/A8XC.

NATIONAL AIR AND SPACE INTELLIGENCE CENTER

COSTELLO, CHRISTOPHER S., *Multi-Reference Frame Image Registration for Rotation, Translation, and Scale*. AFIT/GE/ENG/08-05. Faculty Advisor: Dr. Richard K. Martin. Sponsor: NASIC.

HALL, DAVID M., *Demonstrative Maneuvers for Aircraft Agility Predictions*. AFIT/GAE/ENV/08-M13. Faculty Advisor: Lt Col Christopher M. Shearer. Sponsor: NASIC.

SCHMUNK, MATTHEW M., *Initial Determination of Low Earth Orbits Using Commercial Telescopes*. AFIT/GA/ENV/08-M11. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: NASIC.

STRATTON, MARK A., *An Investigation of Limitations in the Accuracy of Time-to-Location Internet Protocol Geolocation*. AFIT/GIR/ENV/08-M21. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: NASIC/SMAL.

4.2.4. AIR EDUCATION AND TRAINING COMMAND

HOLLAND, JEFFREY G., *Evaluating Experiential Leader Development: A Programmatic of the Effectiveness of US Air Force Squadron Officer School Curricula*. AFIT/GLM/ENV/08-M01. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: AETC/SOC/DES.

KETTLES, THOMAS R., *Integration of Information Operations Theory into the Corporate Air Force*. AFIT/GIR/ENG/08-02. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AETC/SOC/DE.

LARSON, PHILLIP K., *Forecasting Expeditionary Training for Company Grade Logistics Readiness Officers: A Delphi Study*. AFIT/GLM/ENS/08-8. Faculty Advisor: Dr. William A. Cunningham. Sponsor: AETC/A4R.

AIR FORCE INSTITUTE OF TECHNOLOGY

NOTE: Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current and future USAF, DoD and/or Homeland Security requirements.

BEACH, MICHAEL J., *An Analysis of Construction Cost and Schedule Performance*. AFIT/GEM/ENV/08-M02. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

BOYER, BARTH H., *Creep-Rupture and Fatigue Behavior of a Notched Oxide/Oxide Ceramic Matrix Composite at Elevated Temperature*. AFIT/GAE/ENY/08-J01. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.

BURRIS, ANDREW B., *A Qualitative and Quantitative Assessment of Readiness for Organizational Change Literature*. AFIT/GEM/ENV/08-J01. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

CARROLL, SEAN C., *Mission Impact Analysis Visualization for Enhanced Situational Awareness*. AFIT/GCO/ENG/08-01. Faculty Advisor: Lt Col Stuart H. Kurkowski. Sponsor: N/A.

CERNY, TROY A., *Discrete Event Simulation of a Suppression of Enemy Air Defenses (SEAD) Mission*. AFIT/GSS/ENV/08-M01. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

CONFER, BRIAN S., *An Analysis of Second-Tier Arms Producing Country Offset Policies: Technology Transfer and Defense Industrial Base Establishment*. AFIT/GRD/ENV/08-M03. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.

DELICAN, SABAN ATINC, *Electrically Steerable Diffraction Gratings for Hyperspectral Imaging: A Microelectromechanical System Design and Fabrication*. AFIT/GE/ENG/08-01. Faculty Advisor: Dr. Guna Seetharaman. Sponsor: N/A.

DERBIS, RACHEL M., *Modeling GPS Satellite Orbits Using KAM Tori*. AFIT/GA/ENY/08-M09. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

DERBIS, RICHARD M., *Ultrafast Spectroscopy of Mid-Infrared Semiconductors Using the Signal and Idler Beams of a Synchronous Optical Parametric Oscillator*. AFIT/GAP/ENP/08-M02. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: N/A.

EDWARDS, MICHAEL T., *Strategies for Minimizing Monetary Loss in the Department of Defense Budget Through Use of Financial Derivatives*. AFIT/GIR/ENV/08-M05. Faculty Advisor: Lt Col Jeffrey S. Smith. Sponsor: N/A.

GOUGH, DAVID P., *A Multiple Case Study Analysis of Digital Preservation Techniques Across Government, Private, and Public Service Organizations*. AFIT/GIR/ENV/08-M08. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

GULMUS, MESUT, *Determining the Capability Requirements for a Space Based Optical Sensor to Determine the Trajectory of an Incoming Antisatellite Weapon*. AFIT/GSS/ENY/08-M03. Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

HICKMAN, KRISTA M., *A Decision Tool to Evaluate Budgeting Methodologies for Estimating Facility Recapitalization Requirements*. AFIT/GEM/ENV/08-M09. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.

JOHNSON, MICHAEL D., *Dynamic Supersonic Base Store Ejection Simulation Using Begger*. AFIT/GAE/ENY/08-D01. Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: N/A.

JOHNSON, ROBERT J., *Improved Feature Extraction, Feature Selection, and Identification Techniques that Create a Fast Unsupervised Hyperspectral Target Detection Algorithm*. AFIT/GOR/ENS/08-07. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: N/A.

KANG, YOUN IN, *Combat Identification Using Multiple UAV Swarm*. AFIT/GOR/ENS/08-09. Faculty Advisor: Dr. John O. Miller. Sponsor: N/A.

KAYA, EMRE, *Crew Exploration Vehicle (CEV) Skip Entry Trajectory*. AFIT/GSS/ENY/08-M06. Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

KAYS, JUAN A., *Position Characteristics and Their Relationship to Selection for Promotion*. AFIT/GEM/ENV/08-M11. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

KINLEY, KELLI S., *What Constitutes an Act of War in Cyberspace*. AFIT/GIR/ENV/08-M12. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: N/A.

LEON, ELISABETH M., *Molecular Characterization of Wetland Soil Bacterial Communities in Constructed Mesocosms*. AFIT/GES/ENV/08-M04. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

LOTT, JANELL M., *Physical Attractiveness, Social Network Location, and Performance in the Military*. AFIT/GEM/ENV/08-M12. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

MATHER, DAVID E., *Discrete Counting of Short Lived Isotopes with Low Background Detectors*. AFIT/GNE/ENP/08-M03. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.

MAXON, RYAN A., *Software Assurance Best Practices for Air Force Weapon and Information Technology Systems - Are We Bleeding?* AFIT/GIR/ENV/08-M13. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: N/A.

NICHOLSON, BYRON D., *A Delphi Study Assessing Long-term Access to Electronic Medical Records (EMR)*. AFIT/GIR/ENV/08-M15. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

NORGAARD, JASON C., *An Examination Into How Group Performance is Influenced by Various Communication Channels*. AFIT/GIR/ENV/08-M16. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

OLSEN, NATHAN P., *The Impact of Operations Tempo (OPTEMPO) on Intentions to Depart the Military. Does the Increase of OPTEMPO Cause Action?* AFIT/GEM/ENV/08-M15. Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: N/A.

OWNBY, JOHN F., *The Effect of Elevated Temperature on the Fretting Fatigue Behavior of Nickel Alloy IN-100*. AFIT/GA/ENV/08-M04. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.

OZER, SONER, *Increasing Combat Aircraft Survivability Through Coherent Self-Protection Jammers*. AFIT/GE/ENG/08-20. Faculty Advisor: Maj Michael A. Saville. Sponsor: CCR.

PAGUIRIGAN, HENRY G., *Suspicion Modeling in Support of Cyber-Influence Operations/Tactics*. AFIT/GIR/ENV/08-M17. Faculty Advisor: Maj Jason M. Turner. Sponsor: N/A.

POGORZELSKI, WILLIAM A., *Software Acquisition Improvement in the Aeronautical Systems Center*. AFIT/GRD/ENV/08-S1. Faculty Advisor: Lt Col Brian Hermann. Sponsor: N/A.

REICH, JOSEPH P., *Ionospheric Response to Solar Flares Using an Improved Version of SAMI2*. AFIT/GAP/ENP/08-M08. Faculty Advisor: Lt Col Christopher G. Smithtro. Sponsor: N/A.

ROACH, NEAL R., ROHE, WAYNE C., and WELTY, NATHAN F., *A System Engineering Approach to the Design of a Spacecraft Dynamics and Control Testbed*. AFIT/GSE/ENV/08-M01. Faculty Advisor: Dr. Jonathan T. Black. Sponsor: N/A.

ROHE, WAYNE C., See ROACH, NEAL R.

ROQUE, PAUL N., *Performance Analysis of Effective Range and Orientation of UHF Passive RFID*. AFIT/GCO/ENG/08-06. Faculty Advisor: Dr. Richard A. Raines. Sponsor: CCR.

SAAVEDRA, FRANCIS M., *A Maturity Model and Architecture Definition to Support Graduate Distance Learning*. AFIT/GIR/ENV/08-M19. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFIT/SC.

SOTOROPOLIS, THEODORE J., *Selecting the Best Thermal Building Insulation Using a Multi-Attribute Decision Model*. AFIT/GEM/ENV/08-M17. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.

TOWNSEND, BRADLEY R., *Space Based Satellite Tracking and Characterization Utilizing Non-Imaging Passive Sensors*. AFIT/GA/ENV/08-M06. Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: N/A.

TRAMEL, BILLY D., *Factors that May Affect Retention of Enlisted Explosive Ordinance Disposal Airmen*. AFIT/GEM/ENV/08-J02. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

VAN DYK, STEFANIE L., *Forecasting Flying Hour Costs of the B-1, B-2, and B-52 Bomber Aircraft*. AFIT/GCA/ENV/08-M02. Faculty Advisor: Lt Col Eric J. Unger. Sponsor: N/A.

WALLACE, RONALD S., *How a Multidimensional View of Perceived Organizational Support Impacts Self-Efficacy and Task Understanding During Training for Boundary Spanning Tasks*. AFIT/GEM/ENV/08-M21. Faculty Advisor: Lt Col Alexander J. Barelka. Sponsor: N/A.

WELTY, NATHAN F., See ROACH, NEAL R.

WERLING, JOSEPH B., *An Exploratory Examination of Social Website Quality*. AFIT/GIR/ENV/08-M23. Faculty Advisor: Lt Col Alexander J. Barelka. Sponsor: N/A.

WEVER, PAUL S., *A System Dynamic Model of Leader Emergence*. AFIT/GEM/ENV/08-M22. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

WILLIAMS, DANIEL J., *An Analysis of the Factors Affecting Training Transfer within the Work Environment*. AFIT/GIR/ENV/08-M25. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

ZAMORA, EDGARD I., *High Performing Teams: The Moderating Effects of Communication Channels*. AFIT/GIR/ENV/08-M27. Faculty Advisor: Maj Jason M. Turner. Sponsor: N/A.

4.2.5. AIR FORCE MATERIEL COMMAND

BURNWORTH, TODD C., *Simulated Multi-Echelon Readiness-Based Inventory Leveling with Lateral Resupply*. AFIT/GOR/ENS/08M-23. Faculty Advisor: Dr. John O. Miller. Sponsor: AFMC/A9A.

CHESSMAN, JOHN A., *A Delphi Study of HIPAA Compliance to Battlefield Medical Evacuation*. AFIT/GIR/ENV/08-M03. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: 88 MDSS/SGSN.

GOEHRING, SIDNEY W., *An Analysis of Competencies for Managing Science and Technology Programs*. AFIT/GRD/ENV/08-M06. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: HQ AFMC/A5S.

HEPLER, AARON J., *Balanced Scorecard: Evaluation of Air Force Material Command's Implementation and Use*. AFIT/GLM/ENS/08-03. Faculty Advisor: Lt Col Bradley E. Anderson. Sponsor: AFMC 554 ELSG/SBI.

KENDALL, KELLY D., *AFMC Customer Satisfaction Study at the Air Logistics Centers*. AFIT/GLM/ENS/08-5. Faculty Advisor: Dr. William A. Cunningham. Sponsor: AFMC/A4SP.

POINDEXTER, JESSICA L., *Nano-Mechanical Properties of Heat Inactivated Bacillus Anthracis and Bacillus Thuringiensis Spores*. AFIT/GAP/ENP/08-M07. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AFMC/CX.

ROSNER, JAMES W., *An Analysis of the Design-Build Delivery Method in Air Force Military Construction*. AFIT/GEM/ENV/08-M16. Faculty Advisor: Lt Col Christopher J. West. Sponsor: AFMC MSO/A7M and ACC/CCTT.

AERONAUTICAL SYSTEMS CENTER

BECHTLOFF, RYAN D., *An Analysis of Information Assurance Risk Management Methods for Use in Embedded Weapons Systems*. AFIT/GIR/ENV/08-M02. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: ASC/ENAS.

BROWN, RICHARD A., CARTWRIGHT, ARTHUR D., and MCCLAIN, BRYON E., *Evaluation of Joint Precision Airdrop System Aircraft Integration Concepts Utilizing Activity-Based Methodology*. AFIT/GSE/ENV/08-M04. Faculty Advisor: Dr. Joseph W. Carl. Sponsor: ASC/516 AESW/JPD.

CARTWRIGHT, ARTHUR D., See BROWN, RICHARD A.

COWAN, ROBERT M., *An Application and Assessment of Attack and Protection Tree Methodologies In The Evaluation of Risk in an Embedded Weapon System*. AFIT/GIR/ENV/08-M04. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: ASC/ENAS.

HAAN, NICHOLAS W., *Examination of Insider Threat Detection within a Generic Unmanned Aerial Vehicle System*. AFIT/GIR/ENV/08-M09. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: ASC/ENAS.

MCCLAIN, BRYON E., See BROWN, RICHARD A.

AIR FORCE RESEARCH LABORATORY [AFRL]

SOLOMON, CHARLES D., *An Analysis of Methodologies & Best Practices for Rapidly Acquiring Technologies to Meet Urgent Warfighter Needs*. AFIT/GRD/ENV/08-M11. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: HQ AFRL/XPT.

AFRL: AIR FORCE OFFICE OF SCIENTIFIC RESEARCH

ARMBRUSTER, DAVID R., *Production and Characterization of Femtosecond-Laser-Induced Air Plasma*. AFIT/GAP/ENP/08-M01. Faculty Advisor: Lt Col Matthew J. Bohn. Sponsor: AFOSR.

BELUE, JOHN M., *Network Visualization Design using Prefuse Visualization Framework*. AFIT/GCS/ENG/08-03. Faculty Advisor: Lt Col Stuart H. Kurkowski. Sponsor: AFOSR.

CAKIROGLU, BORA, *Construction and Testing of Broadband High Impedance Ground Planes (HIGP) for Surface Mount Antennas*. AFIT/GE/ENG/08-02. Faculty Advisor: Dr. Andrew J. Terzuoli. Sponsor: AFOSR.

CHMIEL, AARON J., *Finite Element Simulation Methods for Dry Sliding Wear*. AFIT/GAE/ENY/08-M03. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFOSR.

COYNE, MARK E., *Hot Swapping Protocol Implementations in the OPNET Modeler Development Environment*. AFIT/GCS/ENG/08-05. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

CULLEN, ANDREW J., *A Multi-Objective Linear Program Model to Test Hub-and-Spoke Networks as a Potential Air Force Deployment Alternative*. AFIT/GEM/ENS/08-M01. Faculty Advisor: Dr. James T. Moore. Sponsor: AFOSR/NM and AF/A7.

DINES, DAVID M., *A Hybrid Communications Network Simulation-Independent Toolkit*. AFIT/GCS/ENG/08-08. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

DOGRUL, MURAT, *Design and Optimization of Broadband High Impedance Ground Planes (HIGP) for Surface Mount Antennas*. AFIT/GE/ENG/08-08. Faculty Advisor: Dr. Peter J. Collins. Sponsor: AFOSR/EOARD.

EADDIE, MAMITA T., *Dialable Cryptography for Wireless Networks*. AFIT/GCO/ENG/08-02. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

FONDREN, TERESA J., *Time Resolution of Collapse Events During the Propagation of Ultraviolet Filaments*. AFIT/GAP/ENP/08-M03. Faculty Advisor: Maj Thomas A. Niday. Sponsor: AFOSR.

GRUEN, GREGGORY J., *Time Dependent Annealing Study of Silicon Implanted Aluminum Gallium Nitride*. AFIT/GMS/ENP/08-J01. Faculty Advisor: Dr. Yung Kee Yeo. Sponsor: AFOSR.

HANKINS, TERRY B., *Laser Diagnostic System Validation and Ultra-Compact Combustor Characterization*. AFIT/GAE/ENY/08-M14. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFOSR.

JAMES, MOSES C., *Obfuscation Framework Based on Functionally Equivalent Combinatorial Logic Families*. AFIT/GCS/ENG/08-12. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFOSR.

JANG, BO YEON, *An Investigation into the Advantages, Mechanisms, and Developmental Challenges of Scripted Mobile Routing*. AFIT/GCS/ENG/08-13. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

LAKUSTA, PATRICK J., *Laser-Induced Fluorescence and Performance Analysis of the Ultra-Compact Combustor*. AFIT/GAE/ENY/08-J03. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ and AFOSR.

LIN, ALAN C., *Software Obfuscation with Symmetric Cryptography*. AFIT/GCS/ENG/08-15. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFOSR.

NORMAN, KENNETH E., *Algorithms for White-box Obfuscation Using Randomized Subcircuit Selection and Replacement*. AFIT/GCS/ENG/08-17. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFOSR.

OTTO, ANTHONY R., *Scripted Mobile Network Routing in a Contested Environment*. AFIT/GIR/ENG/08-03. Faculty Advisor: Maj Scott A. Graham. Sponsor: AFOSR/NM.

PECARINA, JOHN M., *Creating an Agent Based Framework to Maximize Information Utility*. AFIT/GCS/ENG/08-19. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

ROBERTS, GREGORY R., *Evaluating Security and Quality of Service Considerations in Critical Infrastructure Communication Networks*. AFIT/GCO/ENG/08-05. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

SAVIDGE, KEVIN J., *Priority Based Buffering over Multiple Lossy Links Using TCP Aware Layer Buffering*. AFIT/GCE/ENG/08-10. Faculty Advisor: Maj Scott A. Graham. Sponsor: AFOSR.

WILLIAMSON, DEREK L., *Inland Resupply Without a Road or Runway: Airdrop Solutions Including High-Altitude Precision Systems*. AFIT/GLM/ENS/08-15. Faculty Advisor: Maj Shane N. Hall. Sponsor: AFOSR/NM and AF/A8XC.

AFRL: AIR VEHICLES DIRECTORATE

CLAYCOMB, ABRAM E., *Extending CFD Modeling to Near-Continuum Flows Using Enhanced Thermophysical Modeling*. AFIT/GAE/ENY/08-M04. Faculty Advisor: Dr. Robert B. Greendyke. Sponsor: AFRL/RB.

ERICSON, DOUGLAS A., *Systems Engineering Analysis for the Development of the Fleeting Target*. AFIT/GSE/ENY/08-M06. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RV and AFRL/RB.

FREDBERG, DANIEL E., *PIV-Based Examination of Deep Stall on an Oscillating Air Foil*. AFIT/GAE/ENY/08-M09. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.

GARDENIER, HUGH E., *An Experimental Technique for Developing Intermediate Strain Rates in Ductile Metals*. AFIT/GAE/ENY/08-M10. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RB.

GREENE, BARTT G., *Characterization and Control of Carbon Dioxide Seed Particle Image Velocimetry*. AFIT/GAE/ENY/08-M12. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.

HANSEN, JOHN H., *Optimal Guidance of a Relay MAV for ISR Support Beyond Line-of-Sight*. AFIT/GAE/ENG/08-01. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/RB.

HARIHARAN, ANIL N., LOUIE, ALAN K., and RIVERA, SCOTT V., *Long Range Strike 2035: An Analysis of Functional Autonomy*. AFIT/GSE/ENV/08-M05. Faculty Advisor: Lt Col Joerg D. Walter. Sponsor: AFRL/RB.

KLEEMAN, MARK P., *Extending CFD Modeling to Near-Continuum Flows Using Enhanced Thermophysical Modeling*. AFIT/GAE/ENY/08-M04. Faculty Advisor: Dr. Robert B. Greendyke. Sponsor: AFRL/RB.

LOUIE, ALAN K., see HARIHARAN, ANIL N.

PACIENCIA, TODD J., *Multi-Objective Optimization of Mixed-Variable, Stochastic Systems Using Single-Objective Formulations*. AFIT/GOR/ENS/08-17. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFRL/RB.

PITCHER, NATHAN A., *A Static Aeroelastic Analysis of a Flexible Wing Mini Unmanned Aerial Vehicle*. AFIT/GAE/ENY/08-M23. Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: AFRL/RB.

RIVERA, SCOTT V., see HARIHARAN, ANIL N.

SAKRYD, GREGORY A., *Systems Engineering Analysis for the Development of the Fleeting Target*. AFIT/GSE/ENV/08-M06. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RB and AFRL/RB.

SERVIDIO, JOSEPH A., *Process Time Refinement for Reusable Launch Vehicle Regeneration Modeling*. AFIT/GLM/ENS/08-11. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: AFRL/RB.

SHAHADY, DAVID E., *Understanding the Emergence of Disruptive Innovation in the Air Force Science and Technology Organizations*. AFIT/GRD/ENV/08-M10. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/RB and AFRL/RB.

SHELNUTT, PAUL J., *Collision Avoidance for UAVs Using Optic Flow Measurement With Line of Sight Rate Equalization and Looming*. AFIT/GE/ENG/08-26. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/RB.

SVANBERG, CRAIG E., *Biomimetic Micro Air Vehicle Testing Development and Small Scale Flapping-Wing Analysis*. AFIT/GAE/ENY/08-M27. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.

TERNING, NATE A., *Real-Time Navigation and Flight Path Generation for Tracking Stop-and-Go Targets with Miniature Air Vehicles*. AFIT/GAE/ENY/08-M28. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RB and AFRL/RB.

VANTREASE, TROY H., *Development and Employment of a Semi-Autonomous Cursor on Target Navigation System for Micro Air Vehicles*. AFIT/GAE/ENY/08-J06. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RB and AFRL/RB.

AFRL: DIRECTED ENERGY DIRECTORATE

BLASY, BRYAN D., *Neutron Detection Utilizing Gadolinium Doped Hafnium Oxide Films*. AFIT/GNE/ENP/08-M02. Faculty Advisor: LTC David A. LaGrafte. Sponsor: AFRL/RD.

EVANS, EMILY C., *A Simulation Optimization Approach to the Design of Unmanned Aircraft Systems*. AFIT/GOR/ENS/08-22. Faculty Advisor: Maj Shane N. Hall. Sponsor: AFRL/RD.

GROB, DARRELL L., *Uncorrelated Track Avoidance*. AFIT/GA/ENY/08-M10. Faculty Advisor: Dr. William E. Wiesel. Sponsor: AFRL/RD.

PLOURDE, MICHAEL D., *Limitations of Segmented Wavefront Control Devices in Emulating Optical Turbulence*. AFIT/GEO/ENG/08-02. Faculty Advisor: Maj Jason D. Schmidt. Sponsor: AFRL/RD.

RODGERS, LUKE P., *Collision Broadening Using Alkali-Filled, Hollow Core Fibers*. AFIT/GAP/ENP/07-S01. Faculty Advisor: Maj Timothy H. Russell. Sponsor: AFRL/RD.

VITAYAUDOM, KEVIN P., *Analysis of Non-Uniform Gain for Control of a Deformable Mirror in an Adaptive-Optics System*. AFIT/GE/ENG/08-35. Faculty Advisor: Maj Jason D. Schmidt. Sponsor: AFRL/RD.

AFRL: 711th HUMAN EFFECTIVENESS WING

CLARKE, BRIAN M., *In Vitro Toxicity and Inflammation Response Induced by Copper Nanoparticles in Rat Alveolar Macrophages*. AFIT/GES/ENV/08-M01. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFRL/RH.

DIAS, SANDRA J., *Characterization of a Fluorescent Protein Reporter System*. AFIT/GRD/ENV/08-M04. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFRL/RH.

HANSEN, ANDREW P., *Cyber Flag: A Realistic Cyberspace Training Construct*. AFIT/GCS/ENG/08-10. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/RH.

HELLESEN, DENZIL L., *An Analysis of Information Asset Valuation (IAV) Quantification Methodology for Application with Cyber Information Mission Impact Assessment (CIMIA)*. AFIT/GIR/ENV/08-M11. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/RH.

HOWELL, RYAN A., *Bibliometrically Mapping Team Cognition Literature: A Co-citation Analysis*. AFIT/GEM/ENV/08-M10. Faculty Advisor: Lt Col Christopher J. West. Sponsor: AFRL/RH.

MCCORMACK-BROWN, STEPHANIE D., *In Vitro Toxicity of Aluminum Nanoparticles in Human Keratinocytes*. AFIT/GIH/ENV/08-M01. Faculty Advisor: Maj Jeremy M. Slagely. Sponsor: AFRL/RH.

POLICARPIO, TIMOTHY R., *Feasibility Study of Encoding Operational Mission Metadata into IPv6 Packet Headers*. AFIT/GE/ENG/08-23. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RH.

SCHEERES, JAMISON W., *Establishing the Human Firewall: Reducing an Individual's Vulnerability to Social Engineering Attacks*. AFIT/GIR/ENG/08-04. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RH.

SCHNEIDER, DANIEL J., *Three Models of Anthrax Toxin Effects on the MAP-Kinase Pathway and Macrophage Survival*. AFIT/GIH/ENV/08-M02. Faculty Advisor: Maj Jeremy M. Slagely. Sponsor: AFRL/RH.

SKARDA, BRYAN E., *Operationalizing Offensive Social Engineering for the Air Force*. AFIT/GCO/ENG/08-07. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RH.

SORRELS, DAVID M., *A System Architecture for Cyber Incident Mission Impact Assessment*. AFIT/GIR/ENV/08-M20. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/RH.

SPRECHER, AARON J., *Microfluidic Power Generation*. AFIT/GE/ENG/08-29. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RH.

TRIPLETT, JOHNNY E., *The Effects of Commercial Video Game Playing: A Comparison of Skills and Abilities for the Predator UAV*. AFIT/GIR/ENV/08-M22. Faculty Advisor: Maj Jason M. Turner. Sponsor: AFRL/RH.

VERMILLION, RICK E., *Comparative Kinetics and Distribution to Target Tissues of Organophosphates Using Physiologically-Based Pharmacokinetic Modeling*. AFIT/GEM/ENV/08-M20. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AFRL/RH.

AFRL: INFORMATION DIRECTORATE

AVITIA, SERAFIN, *Developing Network Situational Awareness Through Visualization of Fused Intrusion Detection System Alerts*. AFIT/GCS/ENG/08-23. Faculty Advisor: Lt Col Stuart H. Kurkowski. Sponsor: AFRL/RI.

HUNT, SHANNON E., *Developing a Reference Framework for Cybercraft Trust Evaluation*. AFIT/GCS/ENG/08-11. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFRL/RI.

MARKS, HUNTER A., *Robust Sensitivity Analysis of Courses of Action Using an Additive Value Model*. AFIT/GOR/ENS/08-14. Faculty Advisor: Maj Shane J. Knighton. Sponsor: AFRL/RI.

AFRL: MATERIALS AND MANUFACTURING DIRECTORATE

BROWN, JASON L. and HANSON, TRAVIS J., *A Systems Engineering Process for an Integrated Structural Health Monitoring System for Aging Aircraft III*. AFIT/GSE/ENV/08-M03. Faculty Advisor: Dr. Som R. Soni. Sponsor: AFRL/RX.

CALLAHAN, JOHN M., *A Study of the Irradiance-and-Temperature-Dependence of Mid-Wave-Infrared (MWIR) Absorption in Indium Antimonide (InSb)*. AFIT/GEO/ENP/08-S01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.

HANSON, TRAVIS J., See BROWN, JASON L.

RASMUSSEN, JOSHUA D., *Image-Based Laser Jam Detection in Infrared Focal Plane Array Detectors*. AFIT/GEO/ENP/08-M05. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.

AFRL: MUNITIONS DIRECTORATE

CHABAK, KELSON D., *Conceptual Study of Rotary-Wing Microbotics*. AFIT/GE/ENG/08-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RW.

HOPP, STEPHEN J., *Coexistent Performance Characterization of the Simulated TTNT GMSK Waveform*. AFIT/GE/ENG/08-12. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/RW.

LEE, JASON K., *Analysis of Multi-Layered Materials Under High Velocity Impact Using CTH*. AFIT/GAE/ENY/08-M19. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RW.

NIELSEN, MICHAEL B., *Development and Flight of a Robust Optical-Inertial Navigation System Using Low-Cost Sensors*. AFIT/GE/ENG/08-19. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RW.

SEDAT, EBCIN, *Tightly Integrating Optical and Inertial Sensors for Navigation Using the UKF*. AFIT/GE/ENG/08-09. Faculty Advisor: Lt Col Michael J. Veth. Sponsor: AFRL/RW.

SWANSON, SEVERIN M., *Evaluation of an OPNET Model for Tactical Targeting Network Technology (TTNT) Airborne Network*. AFIT/GE/ENG/08-32. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFRL/RW.

AFRL: PROPULSION DIRECTORATE

ARGUELLO, MICHAEL A., *The Concept Design of a Split Flow Liquid Hydrogen Turbopump*. AFIT/GAE/ENY/08-M01. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

BOHNERT, ALEX M., *Thermal Characterization of a Hall Effect Thruster*. AFIT/GA/ENY/08-M01. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

ELLIOTT, STEVEN J., *Thermodynamic Modeling of the Meyer Nutating Engine*. AFIT/GAE/ENY/08-M07. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

EVANS, DAVE S., *The Impact of Heat Release in Turbine Film Cooling*. AFIT/GAE/ENY/08-J02. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

GENELIN, CHRISTOPHER L., *Effects of Environment on Creep Behavior of Nextel 720/Alumina-Mullite Ceramic Composite at 1200°C*. AFIT/GAE/ENY/08-M11. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RZ.

GIVENS, RYAN N., *Demonstration of a Strategy to Perform Two-Dimensional Diode Laser Tomography*. AFIT/GAP/ENP/08-M04. Faculty Advisor: Dr. William F. Bailey. Sponsor: AFRL/RZ.

HAUSMAN, ALEXANDER R., *Direct Initiation through Detonation Branching in a Pulsed Detonation Engine*. AFIT/GAE/ENY/08-M17. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

KARASZ, WILLIAM J., *Optimal Re-entry Trajectory Terminal State Due to Variation in Waypoint Locations*. AFIT/GA/ENY/08-M11. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RZ.

KESENEK, CEYLAN, *Contamination Study of Micro Pulsed Plasma Thrusters*. AFIT/GA/ENY/08-M03. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

KLATT, NATHAN D., *On-Board Thermal Management of Waste Heat from a High-Energy Device*. AFIT/GAE/ENY/08-M18. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

LAKUSTA, PATRICK J., *Laser-Induced Fluorescence and Performance Analysis of the Ultra-Compact Combustor*. AFIT/GAE/ENY/08-J03. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ and AFOSR.

MARTIN, DAVID F., *Computational Design of Upperstage Chamber, Aerospike, and Cooling Jacket for Dual-Expander Rocket Engine*. AFIT/GAE/ENY/08-M20. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

MASON, JONATHAN R., *Heat Transfer Due to Unsteady Effects as Investigated in a High-Speed, Full-Scale, Fully-Cooled Turbine Vane and Rotor Stage*. AFIT/GAE/ENY/08-J04. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RZ.

MEENTS, STEVEN M., *Filtered Rayleigh Scattering Measurements in a Buoyant Flow Field*. AFIT/GAE/ENY/08-M22. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RZ.

NAGLEY, ERIC A., *Fuel Composition Analysis of Endothermically Heated JP-8 Fuel for Use in a Pulse Detonation Engine*. AFIT/GAE/ENY/08-J08. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

PEARSON, LINDELL E., *Vibration Analysis of Commercial Thermal Barrier Coatings*. AFIT/GAE/ENY/08-J05. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RZ.

ROLAND, ISAAC, *An Experimental Investigation of Effect of Dimples on Turbine Adiabatic Film Cooling*. AFIT/GAE/ENY/08-M24. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

STRAIN, WILLIAM S., *Design of an Oxygen Turbopump for a Dual Expander Cycle Rocket Engine*. AFIT/GAE/ENY/08-M26. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

THURMAN, JAMES T., *Hall Thruster Plume Diagnostics Utilizing Microwave Interferometry*. AFIT/GAE/ENY/08-S03. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

TIRSI, SAKIR, *Characterizing the Exhaust Plume of the Micro Pulsed Plasma Thrusters by High Speed Imagery*. AFIT/GA/ENY/08-M05. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

WARNER, DUSTIN J., *Advanced Cathodes for Next Generation Electric Propulsion Technology*. AFIT/GA/ENY/08-M07. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

AFRL: SENSORS DIRECTORATE

ASHE, ERIC M., *An Analysis of Critical Technology Identification and AntiTamper Protection in Department of Defense Acquisition Programs*. AFIT/GIR/ENV/08-M01. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/RZ.

BONHOFF, GEROD M., *Using Hierarchical Temporal Memory for Detecting Anomalous Network Activity*. AFIT/GCS/ENG/08-04. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RZ.

BRADY, JENNIFER L., *Limitations of a True Random Number Generator in a Field Programmable Gate Array*. AFIT/GE/ENG/08-01. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RZ.

CHIASSON, MARC A., *Passive Infrared Polarimetric Detection of an Airborne Target*. AFIT/GE/ENP/08-M01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RZ.

CROUCH, JAMES W., *Digital Fingerprinting of Field Programmable Gate Arrays*. AFIT/GE/ENG/08-06. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RZ.

DUFFY, JEFFREY P., *Dynamic Behavior Sequencing in a Hybrid Robot Architecture*. AFIT/GCE/ENG/08-03. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RZ.

EBCIN, SEDAT, *Tightly Integrating Optical and Inertial Sensors for Navigation Using the UKF*. AFIT/GE/ENG/08-09. Faculty Advisor: Lt Col Michael J. Veth. Sponsor: AFRL/RZ.

ERICSON, DOUGLAS A., *Systems Engineering Analysis for the Development of the Fleeting Target*. AFIT/GSE/ENY/08-M06. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RZ and AFRL/RB.

FETZEK, CHARLES A., *Behavior-Based Power Management in Autonomous Mobile Robots*. AFIT/GCE/ENG/08-05. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RZ.

FULTON, THOMAS F., *Change Detection for Processing of Angel Fire Imagery*. AFITGCS/ENG/08-09. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFRL/RZ.

GOLDEN, ERIC M., *Modulation Response of Twin Optically Coupled Diode Lasers*. AFIT/GAP/ENP/08-M05. Faculty Advisor: Maj Thomas A. Niday. Sponsor: AFRL/RZ.

GOODSPEED, ALLISON S., *Measuring Dispersion in Laser Cavity Mirrors using White-Light Interferometry*. AFIT/GAP/ENP/08-M06. Faculty Advisor: Lt Col Matthew J. Bohn. Sponsor: AFRL/RZ.

GRUENTHER, ALEXANDER C., *An Image Based Bidirectional Reflectivity Distribution Function Experiment*. AFIT/GEO/ENG/08-M03. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFRL/RZ.

HAGG, MICHAEL T., *An Image Based Bidirectional Reflectivity Distribution Function Experiment*. AFIT/GEO/ENP/08-M03. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RZ.

HANCEY, BENJAMIN D., *Characterization and Implementation of a Real-World Tracking Algorithm on Field Programmable Gate Arrays with Kalman Filter Test Case*. AFIT/GE/ENG/08-10. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RZ.

HOOPER, DAYLOND J., *A Hybrid Multi-Robot Control Architecture*. AFIT/GCS/ENG/08-02. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RZ.

HUMPHREYS, CLAY J., MAILLOUX, LOGAN O., and SPEAR, GRANT E., *Systems Engineering Analysis for Transition of the Ground Hardness Technology Demonstrator*. AFIT/GSE/ENV/08-M02. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RV.

JUDGE, MATTHEW G., *SHI(EL)DS: A Novel Hardware-Based Security Backplane to Enhance Security with Minimal Impact to System Operation*. AFIT/GCE/ENG/08-07. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/RV.

KENT, JASON T., *Comparative Classification of Low/High Value Receivers*. AFIT/GE/ENG/08-14. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/RV.

LENZ, THOMAS A., *Feature Aided Tracking in the Urban Environment*. AFIT/GE/ENG/08-16. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFRL/RV.

LIDDLE, ADAM J., *Sensitivity Analysis of AlGaIn/GaN HEMTs to Process Variation*. AFIT/GE/ENG/08-17. Faculty Advisor: Lt Col James A. Fellows. Sponsor: AFRL/RV.

LIEFER, NATHANIEL C., *Signal Processing Design of Low Probability of Intercept Waveforms*. AFIT/GE/ENG/08-18. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/RV.

MAILLOUX, LOGAN O., See HUMPHREYS, CLAY J.

McATEE, KYLE R., *Survey of Contrast and Gain Control Techniques for Infrared Focal Planes under Laser Illumination*. AFIT/GEO/ENP/08-M04. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RV.

McELROY, KELLY K., *Applying Automated Theorem Proving to Computer Security*. AFIT/GCS/ENG/08-16. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RV.

NOWAK, DUSTIN J., *Exploitation of Self Organization in UAV Swarms for Optimization in Combat Environments*. AFIT/GCS/ENG/08-18. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: AFRL/RV.

ONTIVEROS, FERNANDO, *Development of a Night Vision Goggle Heads Up Display for Paratrooper Guidance*. AFIT/GCS/ENG/08-24. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RV.

OZDEMIR, HALIL IBRAHIM, *Constellation Design of Geosynchronous Navigation Satellites Which Maximizes Availability and Accuracy Over a Specified Region of the Earth*. AFIT/GSS/ENG/08-01. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RV.

PIERCE, SCOTT J., *Context-Aided Tracking and Track Prediction in Aerial Video Surveillance*. AFIT/GE/ENG/08-21. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFRL/RV.

POHL, ADAM J., *Multi-Objective UAV Mission Planning Using Evolutionary Computation*. AFIT/GE/ENG/08-22. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: AFRL/RV.

SAKRYD, GREGORY A., *Systems Engineering Analysis for the Development of the Fleeting Target*. AFIT/GSE/ENV/08-M06. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RV and AFRL/RB.

SCHEXNAYDER, CHRISTOPHER M., *Effects of Multipath and Oversampling on Navigation Using Orthogonal Frequency Division Multiplexed Signals of Opportunity*. AFIT/GE/ENG/08-25. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RV.

SHAHADY, DAVID E., *Understanding the Emergence of Disruptive Innovation in the Air Force Science and Technology Organizations*. AFIT/GRD/ENV/08-M10. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/RB and AFRL/RV.

SHIRLEY, JASON W., *Hardware Algorithm Implementation for Mission Specific Processing*. AFIT/GE/ENG/08-27. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.

SOLIMAN, NEIL A., *Hyperspectral-Augmented Target Tracking*. AFIT/GE/ENG/08-28. Faculty Advisor: Maj Michael J. Mendenhall. Sponsor: AFRL/RV.

SPEAR, GRANT E., See HUMPHREYS, CLAY J.

STONE, SAMUEL J., *Anti-Tamper Method for Field Programmable Gate Arrays Through Dynamic Reconfiguration and Decoy Circuits*. AFIT/GE/ENG/08-30. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.

SUSKI, WILLIAM C., *Radio Frequency (RF) Fingerprinting Applied to Transient Signal Features from Commercial Communication Devices*. AFIT/GE/ENG/08-31. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/RV.

TAMAYO, ALFRED A., *Applying Frequency-Domain Equalization to Code-Division Multiple Access and Transform-Domain Communications Systems*. AFIT/GE/ENG/08-33. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/RV.

TERNING, NATE A., *Real-Time Navigation and Flight Path Generation for Tracking Stop-and-Go Targets with Miniature Air Vehicles*. AFIT/GAE/ENY/08-M28. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RV and AFRL/RB.

TOWNSEND, JAMES D., *Improvement of ECM Techniques through Implementation of a Genetic Algorithm*. AFIT/GE/ENG/08-34. Faculty Advisor: Maj Michael A. Saville. Sponsor: AFRL/RV.

VANTREASE, TROY H., *Development and Employment of a Semi-Autonomous Cursor on Target Navigation System for Micro Air Vehicles*. AFIT/GAE/ENY/08-J06. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RV and AFRL/RB.

WAY, RAYMOND S., *A Formal Specification and Proof of System Safety Using the Schematic Protection Model*. AFIT/GCS/ENG/08-21. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RV.

ZIMMERMAN, MATTHEW A., *Mitigating Reversing Vulnerabilities in .NET Applications Using Virtualized Software Protection*. AFIT/GCO/ENG/08-09. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/RV.

AFRL: SPACE VEHICLES DIRECTORATE

GEISEL, CHRISTOPHER D., *Navigation Solutions to Enable Space Superiority Through the Repeated Intercept Mission from Highly Elliptical Orbits*. AFIT/GAE/ENY/08-M02. Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: AFRL/RV.

HOCKENBERRY, EUGENE B., *Hardware, Software and Data Analysis Techniques for SRAM-Based Field Programmable Gate Array Circuits*. AFIT/GE/ENG/08-11. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.

SALMOIRAGHI, AMANDA J., *Mission Planning Analysis for Selection of Optimal Constrained Relative Orbit Geometries*. AFIT/GAE/ENY/08-D01. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RV.

WOJNAR, OLGIERD P., *A Constraint Based Approach for Building Operationally Responsive Satellites*. AFIT/GAE/ENY/08-M31. Faculty Advisor: Maj Eric D. Swenson. Sponsor: AFRL/RV.

WRIGHT, JONATHAN W., *Minimizing Secular J2 Perturbation Effects on Satellite Formations*. AFIT/GA/ENY/08-M08. Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: AFRL/RV.

4.2.6. AIR MOBILITY COMMAND

STONE, BRIAN B., *Developing an Excel Decision Support System Using In-Transit Visibility to Decrease DoD Transportation Delays*. AFIT/GOR/ENS/08-20. Faculty Advisor: Dr. James T. Moore. Sponsor: AMC/A9.

4.2.7. AIR FORCE SPACE COMMAND

CHISM, JASON C., *Space Doctrine and Supporting Space Situational Awareness Tools*. AFIT/GSS/ENY/08-J01. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFSPC.

RUSNOCK, CHRISTINA F., *Predicting Cost and Schedule Growth for Military and Civil Space Systems*. AFIT/GRD/ENC/08M-01. Faculty Advisor: Dr. Edward D. White, III. Sponsor: AFSPC/SMC.

24th AIR FORCE (P)

KOLBE, MICHAEL B., *An Analysis of Critical Infrastructure Control Systems and Vulnerabilities*. AFIT/GCO/ENG/08-04. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFCYBER (P).

WILKIN, DORSEY C., *Cyber Ostfriesland: An Operation Against Critical Infrastructure*. AFIT/GCS/ENG/08-22. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFCYBER (P).

4.2.8. USAF FIELD OPERATING AGENCIES

AIR FORCE CENTER FOR ENVIRONMENTAL EXCELLENCE

CORBIN, REBECCA S., *An Analysis of Groundwater Flow Patterns in a Constructed Treatment Wetland Cell*. AFIT/GEM/ENV/08-M04. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF/A7 and AFCEE.

NYIKOS, DAVID M., *Sustainable Design Policy and Leadership in Energy and Environmental Design Certification*. AFIT/GEM/ENV/08-M14. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCEE/TBD.

STUMME, LUKE D., *Optimal Adoption of Green Roofs: Hydrology and Public Finance Applications*. AFIT/GEM/ENV/08-M18. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCEE/TBD.

THOMAS, BENJAMIN J., *Mining Association Rules Between Credits in the Leadership in Energy and Environmental Design for New Construction (LEED-NC) Green Building Assessment System*. AFIT/GEM/ENV/08-M19. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCEE.

THOMPSON, IAN F., *Oxygenation of the Root Zone and TCE Remediation: A Plant Model of Rhizosphere Dynamics*. AFIT/GES/ENV/08-M07. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF/A7 and AFCEE/ERD.

AIR FORCE CIVIL ENGINEER SUPPORT AGENCY

CRABTREE, DONALD C., *Factors Leading to Effectiveness and Satisfaction in Civil Engineer Information Systems*. AFIT/GEM/ENV/08-M05. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: AFCESA.

GRIFFIN, JAMES S., *Impacts of Weather Variations on Energy Consumption Efforts at U.S. Air Force Installations*. AFIT/GEM/ENV/08-M08. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCESA.

AIR FORCE INFORMATION OPERATIONS CENTER

ASCHENBRENNER, BRIAN D., *Identification of Command and Control Information Requirements for the Cyberspace Domain*. AFIT/GIR/ENG/08-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFIOC/IO.

DeYOUNG, MARK E., *Dynamic Protocol Reverse Engineering: A Grammatical Inference Approach*. AFIT/GCS/ENG/08-06. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFIOC.

ERICKSON, THEODORE J., *Digital Signal Processing Leveraged for Intrusion Detection*. AFIT/GCE/ENG/08-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFIOC.

GRIFFIN, JANE J., *DoD Role for Securing United States Cyberspace*. AFIT/GCO/ENG/08-03. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFIOC.

AIR FORCE NUCLEAR WEAPONS AND COUNTERPROLIFERATION AGENCY

HAWKINS, LESLIE S., *Micro-Etched Platforms for Thermal Inactivation of Bacillus Anthracis and Bacillus Thuringiensis Spores*. AFIT/GWM/ENP/08-M01. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AF/A3S and AFNWCA(AT).

AIR FORCE OPERATIONALLY RESPONSIVE SPACE OFFICE

KAHRAMAN, MESUT OZKAN, *A Constraint Based Approach for Building Operationally Responsive Satellites*. AFIT/GSS/ENY/08-S02. Faculty Advisor: Maj Eric D. Swenson. Sponsor: AF Operationally Responsive Space Office.

AIR FORCE PERSONNEL CENTER

WILLIS, WARD G., *Risk Propensity and Knowledge Sharing Intentions of Individuals in a Downsized Organization*. AFIT/GIR/ENV/08-M26. Faculty Advisor: Lt Col Alexander J. Barelka. Sponsor: AFPC/DPS.

AIR FORCE PETROLEUM AGENCY

VANN, LANCE A., *Feasibility of JP-8 to Jet a Fuel Conversion at U. S. Military Facilities*. AFIT/GLM/ENS/08-13. Faculty Advisor: Lt Col Bradley E. Anderson. Sponsor: AFPET/AFF.

AIR FORCE SERVICES AGENCY

MILLER, TROY J., *It is Time the United States Air Force Changes the Way it Feeds its Airmen. Six Universities Perspectives on Outsourcing*. AFIT/GLM/ENS/08-10. Faculty Advisor: Lt Col Bradley E. Anderson. Sponsor: Air Force Services Agency,T2.

AIR FORCE TEST PILOT SCHOOL (AF TPS)

MCLAREN, SCOTT A., *Velocity Estimate Following Air Data System Failure*. AFIT/GAE/ENY/08-M21. Faculty Advisor: Maj Paul A. Blue. Sponsor: AFTPS/ED.

SPEARES, STEVEN W., *Handling Qualities Evaluation of a Supersonic Tailless Air Vehicle*. AFIT/GAE/ENY/08-M25. Faculty Advisor: Maj Paul A. Blue. Sponsor: AFTPS/ED.

4.2.9. DEPARTMENT OF DEFENSE

GALLUP, HEATHER L., *Blending the Battlefield: An Analysis of Using Private Military Companies to Support Military Operations in Iraq*. AFIT/GRD/ENV/08-M05. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: National Defense University.

SEAMAN, GREGORY G., *Optimization of Therapeutic Strategies for Organophosphate Poisoning*. AFIT/GES/ENV/08-M06. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF Surgeon General and DoD Joint Program Executive Office for Chemical and Biological Defense.

DEFENSE ACQUISITION UNIVERSITY

GARDNER, CHRISTOPHER P., *Balancing Government Risks with Contractor Incentives in Performance-Based Logistics Contracts*. AFIT/GLM/ENS/08-2. Faculty Advisor: Dr. Jeffrey A. Odgen. Sponsor: DAU.

GRIGORIAN, REZA A., *Assessment of the Current Cultural Awareness and Training for the Air Force Contingency Contracting Officer*. AFIT/GRD/ENV/08-M07. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: DAU/Midwest Region.

DEFENSE INSTITUTE OF SECURITY ASSISTANCE MANGEMENT

HARRIS, RANDY M., *An Analysis of the Effectiveness of the International Military Education and Training Program*. AFIT/GIR/ENV/08-M10. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: DISAM/DI.

ENVIRONMENTAL SECURITY TECHNOLOGY CERTIFICATE PROGRAM

CRAIG, DANIEL A., *Development of a Screening Tool to Facilitate Technology of an Innovative Technology to Treat Perchlorate-Contaminated Water*. AFIT/GEM/ENV/08-M06. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: ESTCP.

HIGH ENERGY LASER JOINT TECHNOLOGY OFFICE

SPRING, JUSTIN B., *Modeling of SBS Phase Conjugation in Multimode Step Index Fibers*. AFIT/GAP/ENP/08-M09. Faculty Advisor: Maj Timothy H. Russell. Sponsor: HEL/JTO.

JOINT IMPROVISED EXPLOSIVE DEVICE DEFEAT ORGANIZATION

DAWLEY, LYLE M., LONG, ALICE M. and MARENTETTE, LENORE A., *Developing a Decision Model for Joint Improvised Explosive Device Defeat Organization (JIEDDO) Proposal Selection*. AFIT/GSE/ENV/08-J01. Faculty Advisor: Maj Shane A. Knighton. Sponsor: JIEDDO.

LONG, ALICE M., See DAWLEY, LYLE M.

MARENTETTE, LENORE A., See DAWLEY, LYLE M.

NATIONAL SECURITY SPACE OFFICE

LUPA, JOSEPH S., *Simulation of National Intelligence Process with Fusion*. AFIT/GOR/ENS/08-13. Faculty Advisor: Dr. John O. Miller. Sponsor: NSSO.

OFFICE OF THE SECERETARY OF DEFENSE

FOGG, PAUL N., II, *Forensics Image Background Matching Using Scale Invariant Feature (SIFT) Transform and Speeded Up Robust Features (SURF)*. AFIT/GCE/ENG/08-02. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: DoD Cyber Crime Center.

UNITED STATES STRATEGIC COMMAND

KAPPEDAL, RYAN D., *Intelligence Surveillance and Reconnaissance Asset Assignment for Optimal Mission Effectiveness*. AFIT/GOR/ENC/08-10. Faculty Advisor: Maj August G. Roesener. Sponsor: USSTRATCOM.

STEINBERGER, JESSICA A., *A Survey of Satellite Communications System Vulnerabilities*. AFIT/GA/ENG/08-01. Faculty Advisor: Dr. Richard A. Raines. Sponsor: USSTRATCOM.

UNITED STATES CENTRAL COMMAND

TANNEHILL, BRYAN R., *Forecasting Instability Indicators in the Horn of Africa Region*. AFIT/GOR/ENS/08-21. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: USCENTCOM J8-ARB.

UNITED STATES NAVY

BROWNING, DAVID W., *Analysis of the EA-6B Power Trim Indicator (PTI) System*. AFIT/GAE/ENY/08-D04. Faculty Advisor: Dr. Paul I. King. Sponsor: NAVAIR.

4.2.10. DEPARTMENT OF ENERGY

ALEXANDER, JEFF A., CHARLES-VICKERS, MARTHA, SMITH, TALBOT L., and VICKERS, MICHAEL S., *Operationally Responsive Space: An Architecture and Enterprise Model for Adaptive Integration, Test and Logistics*. AFIT/GSE/ENV/08-J01DL. Faculty Advisor: Dr. Joseph W. Carl. Sponsor: Sandia National Laboratory.

BETHEA, DAVID M., *Improving Mixed Variable Optimization of Computational and Model Parameters Using Multiple Surrogate Functions*. AFIT/GOR/ENC/08-01. Faculty Advisor: Lt Col Mark A. Abramson. Sponsor: Los Alamos National Laboratory.

CHARLES-VICKERS, MARTHA, See ALEXANDER, JEFF A.

SMITH, TALBOT L., See ALEXANDER, JEFF A.

VICKERS, MICHAEL S., See ALEXANDER, JEFF A.

4.2.11. OTHER FEDERAL AGENCIES

DEPARTMENT OF HOMELAND SECURITY

RAKES, KELLY D., *Evaluating the Response of Polyvinyl Toluene Scintillators Used in Portal Detectors*. AFIT/GNE/ENP/08-M04. Faculty Advisor: Dr. James C. Petrosky. Sponsor: DHS/DNDO.

SMITH, BRIANA J., *Near-Time Characterization of a Domestic Nuclear Event Using Gamma Spectroscopy*. AFIT/GNE/ENP/08-M06. Faculty Advisor: Dr. Charles J. Bridgman. Sponsor: DHS/DNDO.

ENVIRONMENTAL PROTECTION AGENCY

WHEELDON, JACK G., *An Evaluation and Implementation Guide for Current Groundwater Mass Flux Measurement Practices*. AFIT/GEM/ENV/08-M23. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: US EPA-NRMRL-GWERD.

4.2.12. NON-FEDERAL SPONSORS

BAHRAIN DEFENSE FORCE

AL-NOAIMI, ABDULLA A., *Investigation Into Fretting Fatigue Under Cyclic Contact Load and in Conjunction with Fatigue of Titanium Alloy*. AFIT/GAE/ENY/08-M30. Faculty Advisor: Dr. Shankar Mall. Sponsor: Bahrain Defense Force.

OKLAHOMA STATE UNIVERSITY

MOSELEY, MICHAEL W., *A Case-Based Exploration of Task/Technology Fit in a Knowledge Management Context*. AFIT/GIR/ENV/08-M14. Faculty Advisor: Maj Jason M. Turner. Sponsor: Oklahoma State University Spears School of Business.

WHITFIELD, JOHN F., *An Empirical Investigation of Factors Influencing Knowledge Management System Success*. AFIT/GIR/ENV/08-M24. Faculty Advisor: Maj Jason M. Turner. Sponsor: Oklahoma State University Spears School of Business.

TURKISH AIR FORCE

ALKANAT, OMER, *Determining the Surface-to-Air Missile Requirement for Western and Southern Part of the Turkish Air Defense System*. AFIT/GOR/ENS/08-01. Faculty Advisor: Dr. James T. Moore. Sponsor: Turkish Air Force.

CANDIR, AHMET AYDIN, *Discrete Event Simulation of a Suppression of Enemy Air Defenses (SEAD) Mission*. AFIT/GOR/ENS/08-03. Faculty Advisor: Dr. John O. Miller. Sponsor: Turkish Air Force.

GOKCEN, OSMAN BAHADIR, *Robust Aircraft Squadron Scheduling in the Face of Absenteeism*. AFIT/GOR/ENS/08-06. Faculty Advisor: Maj Shane J. Knighton. Sponsor: Turkish Air Force.

OKAL, ADEM, *Simulation Modeling and Analysis of F-16 Pilot Training Squadron*. AFIT/GOR/ENS/08-15. Faculty Advisor: Dr. John O. Miller. Sponsor: Turkish Air Force.

WRIGHT STATE UNIVERSITY

KOCHERSBERGER, JONATHAN P., *Linking Embeddedness and Macroinvertebrate in Two Southwest Ohio Streams*. AFIT/GES/ENV/08-M03. Faculty Advisor: Lt Col David A. Smith. Sponsor: Wright State University Dept of Earth and Environmental Sciences.

MONTGOMERY COUNTY (OH) POLICE DEPARTMENT

LOEFFELHOLZ, BERNARD J., *Street Gangs: A Modeling Approach to Evaluation of "At Risk" Youth*. AFIT/GOR/ENS/08-24. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: Montgomery County (OH) Police Department.

4.3. GRADUATE RESEARCH PAPERS

Note: Students in non-thesis graduate programs at AFIT may write graduate research papers.

4.3.1. OFFICE OF THE SECRETARY OF THE AIR FORCE

DEVOE, DANIEL A., *When Precision Becomes Precise: What it Takes to Achieve 10 Meter Accuracy with the Joint Precision Airdrop System*. AFIT/IMO/ENS/08-03. Faculty Advisor: Dr. James T. Moore. Sponsor: SAF/AQQ.

4.3.2. HEADQUARTERS UNITED STATES AIR FORCE

EASTLAND, KEVIN M., *Has the Expeditionary Mobility Task Force (EMTF) Organization Outlived Its Usefulness?* AFIT/IMO/ENS/08-06. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: USAF EC/CC.

HALL, JAMES B., *Assessing the Productivity of the Air Force Flying Training Process: Proposing a New Measurement of Success*. AFIT/IMO/ENS/08-07. Faculty Advisor: Lt Col Donald E. Duckro. Sponsor: 18 AF/CV.

MARENTETTE, KENNETH A., *An Objective Decision Tool for Use in Considering Air Force Specialty Code Pairs for Consolidation*. AFIT/ILM/ENS/08-06. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: AF/AIPF.

MUEHE, TARA J., *Developing Future Air Force Cyber Leaders*. AFIT/ICW/ENG/08-06. Faculty Advisor: Maj Paul D. Williams. Sponsor: AF/A2F.

TURNER, JOBIE S., *Fly What You Want, Log What You Need: A New Currency System for USAF Mobility Aircrew*. AFIT/IMO/ENS/08-15. Faculty Advisor: Lt Col Donald E. Duckro. Sponsor: 18 AF/CV.

4.3.3. AIR COMBAT COMMAND

ELLER, JOHN W., HAZEL, BRIAN and ROONEY, BRENDAN D., *Global Persistent Attack: A Systems Architecture, Process Modeling, and Risk Analysis Approach*. AFIT/ISE/ENV/08-J04. Faculty Advisor: Maj Jeffrey D. Havlicek. Sponsor: HQ ACC/A5SC.

HAZEL, BRIAN, See ELLER, JOHN W.

MURPHY, SEAN D., *Air Force Cyber Education: A Critical Analysis*. AFIT/ICW/ENG/08-07. Faculty Advisor: Dr. Richard A. Raines. Sponsor: HQ/8AF.

ORTH, PAUL, *Measuring the Operational Readiness of an Air Force Network Warfare Squadron*. AFIT/ICW/ENG/08-09. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 315th NWS/CC.

ROONEY, BRENDAN D., See ELLER, JOHN W.

4.3.4. AIR EDUCATION AND TRAINING COMMAND

DUDLEY, PAUL J., *Is the Euro-NATO Joint Jet Pilot Training Program Viable in the Post Cold War Era?* AFIT/IMO/ENS/08-05. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: AETC/A5.

AIR FORCE INSTITUTE OF TECHNOLOGY

NOTE: Although no external sponsor is identified, in most cases, AFIT faculty sponsored the below projects due to their relevance to current or future USAF, DoD and/or Homeland Security requirements.

COSNOWSKI, CHARLES, *Defeating 802.11 Wireless Networks*. AFIT/ICW/ENG/08-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

GOOD, MICHAEL J., *Chinese National Strategy of Total War*. AFIT/ICW/ENG/08-02. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

GRANT, SCOTT D., *Improving the Tanker Employment Model*. AFIT/ILM/ENS/08-02. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.

HACKLER, GEORGE C., *Goal Programming Tanker Beddown Decisions*. AFIT/ILM/ENS/08-03. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.

KIMBROUGH, JAMES M., *Examining US Irregular Warfare Doctrine*. AFIT/ILM/ENS/08-04. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: N/A.

NEWBILL, RAYMOND R., *Intelligence Sharing, Fusion Centers, and Homeland Security*. AFIT/ICW/ENG/08-08. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

RAUCH, DANIEL E., *Electronic Warfare for Cyber Warriors*. AFIT/ICW/ENG/08-10. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

WHITING, MICHAEL D., *The Great Firewall of China: Critical Analysis*. AFIT/ICW/ENG/08-12. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

4.3.5. AIR FORCE MATERIEL COMMAND

KOVICH, MATTHEW D., *Developing a Predictive Model for Unscheduled Maintenance Requirements on United States Air Force Installations*. AFIT/ILM/ENS/08-05. Faculty Advisor: Lt Col Stanley E. Griffis. Sponsor: HQ AFMC/A7.

NORTON, JOHN D., *Developing a Predictive Model for Unscheduled Maintenance Requirements on United States Air Force Installations*. AFIT/ILM/ENS/08-05. Faculty Advisor: Lt Col Stanley E. Griffis. Sponsor: AFMC/A7.

AERONAUTICAL SYSTEMS CENTER

BORNEJKO, TRINA L., GLASSCOCK, CHARLES G. and SPRENKLE, DENNIS R., *Creating a Discrete Event Simulation to Determine the Military Worth of Developing an Electronic Warfare Battle Manager Function within an Airborne Electronic Attack System of Systems Architecture*. AFIT/ISE/ENV/08-J05. Faculty Advisor: Dr. David R. Jacques. Sponsor: ASC/XRS.

GLASSCOCK, CHARLES G., see BORNEJKO, TRINA L.

SPRENKLE, DENNIS R., see BORNEJKO, TRINA L.

AIR FORCE RESEARCH LABORATORY

HUNSBERGER, MICHAEL G., *A Methodology for Cybercraft Requirement Definition and Initial System Design*. AFIT/ICW/ENG/08-03. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFRL/RI.

O'MALLEY, DAVID R., and ZALL, JONATHAN E., *Architecting Cognition Within the Department of Defense Architecture Framework*. AFIT/ISE/ENV/08-J06. Research Advisor: Dr. John M. Colombi. Sponsor: AFRL/RH.

ZALL, JONATHAN E., see O'MALLEY, DAVID R.

4.3.6. AIR MOBILITY COMMAND

BUFORD, TRAVIS P., *Contingency Response Groups: How Many Do We Really Need?*

AFIT/IMO/ENS/08-01. Faculty Advisor: Dr. James T. Moore. Sponsor: 621 COSG/CD.

CLARK, WILL, *Optimal Cargo Compartment Size for the Advanced Joint Combat System.*

AFIT/IMO/ENS/08-02. Faculty Advisor: Lt Col Pamela S. Donovan. Sponsor: AMC/A8X.

DEVOS, BROCK E., *Airfield Operations and Airbase Opening.* AFIT/IMO/ENS/08-04. Faculty Advisor:

Dr. Alan R. Heminger. Sponsor: AMC/A3.

HANSON, JEREMY R., *Moving the Force: The Impact of Large Scale Brigade Combat Team Deployments.*

AFIT/IMO/ENS/08-08. Faculty Advisor: Dr. James T. Moore. Sponsor: AMC/A3.

HOWLAND, ERIC J., *A Lean Look at the C-17 Home Station Departure Process.* AFIT/IMO/ENS/08-09.

Faculty Advisor: Dr. Alan W. Johnson. Sponsor: 437 OG/CC.

KIELTY, ROBERT A., *A Multinational Perspective on Aircraft Spares Cross Servicing for the Mobility Air*

Forces. AFIT/IMO/ENS/08-10. Faculty Advisor: Lt Col Stanley E. Griffis. Sponsor: AMC/A4.

LACY, JOHN A., *Application of AFSO21 Principles to Navigator Training at the C-130 Formal Training*

Unit. AFIT/IMO/ENS/08-11. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: 314 OG/CC.

MITCHELL, LAWRENCE W.S., *Fee for Service Air Refueling: A Summary Market Analysis.*

AFIT/IMO/ENS/08-12. Faculty Advisor: Dr. James T. Moore. Sponsor: AMC/CR.

NULTON, JASON D., *Assessing Air Force Logistics Reengineering (LogR) Against Process in the Supply*

Chain. AFIT/IMO/ENS/08-14. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: AMC/A4.

ZEINER, ZACHARY B., *Intra-Theater Airlift Cost Analysis.* AFIT/IMO/ENS/08-16. Faculty Advisor: Dr.

James T. Moore. Sponsor: AF/A9.

4.3.7. AIR FORCE SPACE COMMAND

REPIK, KEITH, *Defeating Adversary Network Intelligence Efforts with Active Cyber Defense Techniques.*

AFIT/ICW/08-11. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFCYBER.

4.3.8. AIR FORCE RESERVE COMMAND

BROWN, KYLE D., LITTLE, ADAM W., and MUHA, MATTHEW T., *Capital Investment Management for*

Air Force Reserve Command (AFRC) Information Technology (IT). AFIT/ISE/ENV/08-J03. Research

Advisor: Dr. John M. Colombi. Sponsor: HQ AFRC.

LITTLE, ADAM W., see BROWN, KYLE D.

MUHA, MATTHEW T., see BROWN, KYLE D.

4.3.9. DEPARTMENT OF DEFENSE

NICHOL, JAMES P., *Analysis of AFRICOM Theater Airlift Distribution Network.* AFIT/IMO/ENS/08-13. Faculty

Advisor: Dr. James T. Moore. Sponsor: AFRICOM/J3.

PETTUS, EVAN L. and. STEELE, RICHARD V., *Air Dominance in an Anti-Access Environment.*

AFIT/ILM/ENS/08-08. Faculty Advisor: Lt Col Bradley E. Anderson. Sponsor: DoD Policy Planning.

STEELE, RICHARD V., See Pettus, Evan L.

5. ACADEMIC DEPARTMENT PUBLICATIONS AND FUNDING INFORMATION

5.1. DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS

Access Phone: 937-255-3069, DSN 785-3069

Fax: 937-656-7621, DSN 986-7621

Homepage: <http://www.afit.edu/en/eny/>

5.1.1	<u>DOCTORAL DISSERTATIONS</u>	43
5.1.2	<u>MASTER'S THESES</u>	43
5.1.3	<u>FUNDED RESEARCH PROJECTS</u>	47
5.1.4	<u>REFEREED JOURNAL PUBLICATIONS</u>	49
5.1.5	<u>REFEREED CONFERENCE PUBLICATIONS</u>	52
5.1.6	<u>SUBSTANTIAL CONSULTATIONS</u>	56
5.1.7	<u>OTHER PRESENTATIONS PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u>	56

5.1.1. DOCTORAL DISSERTATIONS

BOND, VANESSA L., *Flexible Twist for Pitch Control in a High Altitude Long Endurance Aircraft with Nonlinear Response*. AFIT/DS/ENY/08-D11. Faculty Advisor: Dr. Robert A. Canfield. Sponsor: AFRL/RZ.

DOSTER, JASON C., *Hypermixer Pylon Fuel Injection for Scramjet Combustors*. AFIT/DS/ENY/08-02. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

FREEBORN, ANDREW B., *Pylon Effects on a Scramjet Cavity Flameholder Flowfield*. AFIT/DS/ENY/08-04. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

HOPPER, DAVID R., *Direct Initiation of Multiple Tubes by Detonation Branching in a Pulsed Detonation Engine*. AFIT/DS/ENY/08-05. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

LARSON, REID A., *A Novel Method Characterizing the Impact Response of Functionally Graded Plates*. AFIT/DS/ENY/08-06. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RB.

MCCLUNG, AMBER J.W., *Extension of Viscoplasticity Based on Overstress to Capture the Effects of Prior Aging on the Time Dependent Deformation Behavior of a High-Temperature Polymer: Experiments and Modeling*. AFIT/DS/ENY/08-D15. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFOSR.

REED, SHAD A., *Development of Experimental, Analytical, and Numerical Approximations Appropriate for Nonlinear Damping Coatings*. AFIT/DS/ENY/08-01. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RZ.

STEVENS, ROBERT E., *Optimal Control of Electrodynamic Tethers*. AFIT/DS/ENY/08-13. Faculty Advisor: Dr. William E. Wiesel. Sponsor: USNA.

5.1.2. MASTER'S THESES

5.1.2.1. AERONAUTICAL ENGINEERING (GAE)

AL-NOAIMI, ABDULLA A., *Investigation Into Fretting Fatigue Under Cyclic Contact Load and in Conjunction with Fatigue of Titanium Alloy*. AFIT/GAE/ENY/08-M30. Faculty Advisor: Dr. Shankar Mall. Sponsor: Bahrain Defense Force.

ARGUELLO, MICHAEL A., *The Concept Design of a Split Flow Liquid Hydrogen Turbopump*. AFIT/GAE/ENY/08-M01. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

BARTOWITZ, MICHAEL E., *Determination of Static and Dynamic Stability Derivatives*. AFIT/GAE/ENY/08-M02. Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: AFSEO.

BOYER, BARTH H., *Creep-Rupture and Fatigue Behavior of a Notched Oxide/Oxide Ceramic Matrix Composite at Elevated Temperature*. AFIT/GAE/ENY/08-J01. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.

BROWNING, DAVID W., *Analysis of the EA-6B Power Trim Indicator (PTI) System*. AFIT/GAE/ENY/08-D04. Faculty Advisor: Dr. Paul I. King. Sponsor: NAVAIR.

CHMIEL, AARON J., *Finite Element Simulation Methods for Dry Sliding Wear*. AFIT/GAE/ENY/08-M03. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFOSR.

CLAYCOMB, ABRAM E., *Extending CFD Modeling to Near-Continuum Flows Using Enhanced Thermophysical Modeling*. AFIT/GAE/ENY/08-M04. Faculty Advisor: Dr. Robert B. Greendyke. Sponsor: AFRL/RB.

CROWE, DARRELL S., *Improving Beggar Interpolation Decisions Using Cell Volumes*. AFIT/GAE/ENY/08-M05. Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: AFSEO.

DAVIDSON, RYAN J., *A Comparison Of Moiré Interferometry And Digital Image Correlation*. AFIT/GAE/ENY/08-M06. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RX.

ELLIOTT, STEVEN J., *Thermodynamic Modeling of the Meyer Nutating Engine*. AFIT/GAE/ENY/08-M07. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

EVANS, DAVE S., *The Impact of Heat Release in Turbine Film Cooling*. AFIT/GAE/ENY/08-J02. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

FREDBERG, DANIEL E., *PIV-Based Examination of Deep Stall on an Oscillating Air Foil*. AFIT/GAE/ENY/08-M09. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.

GARDENIER, HUGH E., *An Experimental Technique for Developing Intermediate Strain Rates in Ductile Metals*. AFIT/GAE/ENY/08-M10. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RB.

GEISEL, CHRISTOPHER D., *Navigation Solutions to Enable Space Superiority Through the Repeated Intercept Mission from Highly Elliptical Orbits*. AFIT/GAE/ENY/08-M02. Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: AFRL/RV.

GENELIN, CHRISTOPHER L., *Effects of Environment on Creep Behavior of Nextel 720/Alumina-Mullite Ceramic Composite at 1200°C*. AFIT/GAE/ENY/08-M11. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RZ.

GREENE, BARTT G., *Characterization and Control of Carbon Dioxide Seed Particle Image Velocimetry*. AFIT/GAE/ENY/08-M12. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.

HALL, DAVID M., *Demonstrative Maneuvers for Aircraft Agility Predictions*. AFIT/GAE/ENY/08-M13. Faculty Advisor: Lt Col Christopher M. Shearer. Sponsor: NASIC.

HANKINS, TERRY B., *Laser Diagnostic System Validation and Ultra-Compact Combustor Characterization*. AFIT/GAE/ENY/08-M14. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFOSR.

HAUSMAN, ALEXANDER R., *Direct Initiation through Detonation Branching in a Pulsed Detonation Engine*. AFIT/GAE/ENY/08-M17. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

JOHNSON, MICHAEL D., *Dynamic Supersonic Base Store Ejection Simulation Using Begger*. AFIT/GAE/ENY/08-D01. Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: N/A.

KLATT, NATHAN D., *On-Board Thermal Management of Waste Heat from a High-Energy Device*. AFIT/GAE/ENY/08-M18. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

LAKUSTA, PATRICK J., *Laser-Induced Fluorescence and Performance Analysis of the Ultra-Compact Combustor*. AFIT/GAE/ENY/08-J03. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ and AFOSR.

LEE, JASON K., *Analysis of Multi-Layered Materials Under High Velocity Impact Using CTH*. AFIT/GAE/ENY/08-M19. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RW.

MARTIN, DAVID F., *Computational Design of Upperstage Chamber, Aerospike, and Cooling Jacket for Dual-Expander Rocket Engine*. AFIT/GAE/ENY/08-M20. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

MASON, JONATHAN R., *Heat Transfer Due to Unsteady Effects as Investigated in a High-Speed, Full-Scale, Fully-Cooled Turbine Vane and Rotor Stage*. AFIT/GAE/ENY/08-J04. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RZ.

MCLAREN, SCOTT A., *Velocity Estimate Following Air Data System Failure*. AFIT/GAE/ENY/08-M21. Faculty Advisor: Maj Paul A. Blue. Sponsor: TPS/ED.

MEENTS, STEVEN M., *Filtered Rayleigh Scattering Measurements in a Buoyant Flow Field*. AFIT/GAE/ENY/08-M22. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RZ.

NAGLEY, ERIC A., *Fuel Composition Analysis of Endothermically Heated JP-8 Fuel for Use in a Pulse Detonation Engine*. AFIT/GAE/ENY/08-J08. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

PEARSON, LINDELL E., *Vibration Analysis of Commercial Thermal Barrier Coatings*. AFIT/GAE/ENY/08-J05. Faculty Advisor: Dr. Anthony N. Palazotto. Sponsor: AFRL/RZ.

PITCHER, NATHAN A., *A Static Aeroelastic Analysis of a Flexible Wing Mini Unmanned Aerial Vehicle*. AFIT/GAE/ENY/08-M23. Faculty Advisor: Lt Col Raymond C. Maple. Sponsor: AFRL/RB.

ROLAND, ISAAC, *An Experimental Investigation of Effect of Dimples on Turbine Adiabatic Film Cooling*. AFIT/GAE/ENY/08-M24. Faculty Advisor: Dr. Paul I. King. Sponsor: AFRL/RZ.

SALMOIRAGHI, AMANDA J., *Mission Planning Analysis for Selection of Optimal Constrained Relative Orbit Geometries*. AFIT/GAE/ENY/08-D01. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RV.

SHARMA, VIPUL, *Effects of Temperature and Steam Environment on Fatigue Behavior of Three SiC/SiC Ceramic Matrix Composites*. AFIT/GAE/ENY/08-S02. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RX.

SPEARES, STEVEN W., *Handling Qualities Evaluation of a Supersonic Tailless Air Vehicle*. AFIT/GAE/ENY/08-M25. Faculty Advisor: Maj Paul A. Blue. Sponsor: TPS/ED.

STRAIN, WILLIAM S., *Design of an Oxygen Turbopump for a Dual Expander Cycle Rocket Engine*. AFIT/GAE/ENY/08-M26. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZS.

SVANBERG, CRAIG E., *Biomimetic Micro Air Vehicle Testing Development and Small Scale Flapping-Wing Analysis*. AFIT/GAE/ENY/08-M27. Faculty Advisor: Dr. Mark F. Reeder. Sponsor: AFRL/RB.

TERNING, NATE A., *Real-Time Navigation and Flight Path Generation for Tracking Stop-and-Go Targets with Miniature Air Vehicles*. AFIT/GAE/ENY/08-M28. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RV and AFRL/RB.

THURMAN, JAMES T., *Hall Thruster Plume Diagnostics Utilizing Microwave Interferometry*. AFIT/GAE/ENY/08-S03. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

UNDERWOOD, ROMAN T., *Damage Detection Analysis Using Lamb Waves in Restricted Geometry for Aerospace Applications*. AFIT/GAE/ENY/08-M29. Faculty Advisor: Dr. Som R. Soni. Sponsor: DAGSI/AFRL.

VANTREASE, TROY H., *Development and Employment of a Semi-Autonomous Cursor on Target Navigation System for Micro Air Vehicles*. AFIT/GAE/ENY/08-J06. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RV and AFRL/RB.

VILLARREAL, VAUGHN A., *Near Real-Time Battle Damage Assessment*. AFIT/GAE/ENY/08-J07. Faculty Advisor: Dr. David R. Jacques. Sponsor: 86thFWS.

WOJNAR, OLGIERD P., *A Constraint Based Approach for Building Operationally Responsive Satellites*. AFIT/GAE/ENY/08-M31. Faculty Advisor: Maj Eric D. Swenson. Sponsor: AFRL/RV.

5.1.2.2. ASTRONAUTICAL ENGINEERING (GA)

BOHNERT, ALEX M., *Thermal Characterization of a Hall Effect Thruster*. AFIT/GA/ENY/08-M01. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

DERBIS, RACHEL M., *Modeling GPS Satellite Orbits Using KAM Tori*. AFIT/GA/ENY/08-M09. Faculty Advisor: Dr. William E. Wiesel. Sponsor: N/A.

GROB, DARRELL L., *Uncorrelated Track Avoidance*. AFIT/GA/ENY/08-M10. Faculty Advisor: Dr. William E. Wiesel. Sponsor: AFRL/RD.

KARASZ, WILLIAM J., *Optimal Re-entry Trajectory Terminal State Due to Variation in Waypoint Locations*. AFIT/GA/ENY/08-M11. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFRL/RZ.

KESENEK, CEYLAN, *Contamination Study of Micro Pulsed Plasma Thrusters*. AFIT/GA/ENY/08-M03. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

OWNBY, JOHN F., *The Effect of Elevated Temperature on the Fretting Fatigue Behavior of Nickel Alloy IN-100*. AFIT/GA/ENY/08-M04. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.

SCHMUNK, MATTHEW M., *Initial Determination of Low Earth Orbits Using Commercial Telescopes*. AFIT/GA/ENY/08-M11. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: NASIC.

TIRSI, SAKIR, *Characterizing the Exhaust Plume of the Micro Pulsed Plasma Thrusters by High Speed Imagery*. AFIT/GA/ENY/08-M05. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

TOWNSEND, BRADLEY R., *Space Based Satellite Tracking and Characterization Utilizing Non-Imaging Passive Sensors*. AFIT/GA/ENY/08-M06. Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: N/A.

WARNER, DUSTIN J., *Advanced Cathodes for Next Generation Electric Propulsion Technology*. AFIT/GA/ENY/08-M07. Faculty Advisor: Lt Col Richard D. Branam. Sponsor: AFRL/RZ.

WRIGHT, JONATHAN W., *Minimizing Secular J2 Perturbation Effects on Satellite Formations*. AFIT/GA/ENY/08-M08. Faculty Advisor: Lt Col Nathan A. Titus. Sponsor: AFRL/RV.

YELESER, TUFAN, *Creep Behavior of Oxide/Oxide Composites with Monazite Fiber Coating at 1100°C in Air and in Steam Environments*. AFIT/GA/ENY/08-S01. Faculty Advisor: Dr. Marina B. Ruggles-Wrenn. Sponsor: AFRL/RX.

5.1.2.3. MATERIALS AND SCIENCE ENGINEERING (GMS)

HARDER, BENJAMIN T., *Evaluation of Nanocomposites as Lightweight Electronic Enclosures for Satellites' Applications*. AFIT/GMS/ENY/08-J01. Faculty Advisor: Dr. Shankar Mall. Sponsor: N/A.

5.1.2.4. SPACE SYSTEMS (GSS)

CERNY, TROYA., *Discrete Event Simulation of a Suppression of Enemy Air Defenses (SEAD) Mission*. AFIT/GSS/ENV/08-M01. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

CHISM, JASON C., *Space Doctrine and Supporting Space Situational Awareness Tools*. AFIT/GSS/ENY/08-J01. Faculty Advisor: Dr. Richard G. Cobb. Sponsor: AFSPC.

GULMUS, MESUT, *Determining the Capability Requirements for a Space Based Optical Sensor to Determine the Trajectory of an Incoming Antisatellite Weapon*. AFIT/GSS/ENY/08-M03. Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

KAHRAMAN, MESUT OZKAN, *A Constraint Based Approach for Building Operationally Responsive Satellites*. AFIT/GSS/ENY/08-S02. Faculty Advisor: Maj Eric D. Swenson. Sponsor: N/A.

KAYA, EMRE, *Crew Exploration Vehicle (CEV) Skip Entry Trajectory*. AFIT/GSS/ENY/08-M06. Faculty Advisor: Lt Col Kerry D. Hicks. Sponsor: N/A.

5.1.2.5. SYSTEMS ENGINEERING (GSE)

ERICSON, DOUGLAS A., *Systems Engineering Analysis for the Development of the Fleeting Target*. AFIT/GSE/ENY/08-M06. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RV and AFRL/RB.

5.1.3. FUNDED RESEARCH PROJECTS

Note: Research Center affiliations are listed in [] if applicable.

BLACK, JONATHAN T.

“Hybrid Laser/Video 3D Non-Contact Motion Capture and Analysis.” Sponsor: AFOSR. Funding: \$120,000.

BLUE, PAUL A., Maj

“Planning, Guidance, and Control for Multiple UAV Cooperative Operations.” Sponsor: AFRL/RB. Funding: \$35,000. [ANT]

BRANAM, RICHARD D., Lt Col

“AFIT Space and Rocket Propulsion Research.” Sponsor: AFRL/RZ. Funding: \$75,000.

“Coaxial Rocket Injection Instability.” Sponsor: AFOSR. Funding: \$7,020.

“Synthetic Jet Fuel in the Ultra Compact Combustor.” Sponsor: AFRL/RZ. Funding: \$40,000.

“Ultra Compact Combustor Cavity Vane Interactions.” Sponsor: AFOSR. Funding: \$42,469.

CANFIELD, ROBERT A.

“F-16 Ventral Fin Buffet Alleviation Using Piezoelectric Actuators.” Sponsor: USAF TPS. Funding: \$70,634.

“Large Scale Optimization via Reduced Sub-Space Multipoint Approximations.” Sponsor: AFOSR. Funding: \$26,987.

“Nonlinear Gust Response via Direct, Least-Squares Formulation.” Sponsor: AFRL/RB. Funding: \$18,000.

“Tools for Conceptual Design and Engineering Analysis of Micro Air Vehicles.” Sponsor: DAGSI. Funding: \$18,700.

COBB, RICHARD G.

“Systems Engineering Support for Urgent Needs Efforts.” Sponsor: AFRL/RV. Funding: \$35,000. [ANT]

GREENDYKE, ROBERT B.

“Development of Couple Flowfield – Radiation Solution Methods in Ablative Environments.” Sponsor: AFOSR. Funding: \$19,499.

“Reusable Launch Vehicle Flight Aerodynamics with High Fidelity Hypersonic Flowfield Solvers.” Sponsor: AFRL/RB. Funding: \$35,000.

HUFFMAN, RICHARD E., Maj

“Airborne Application of Gravity Gradiometry for Navigation.” Sponsor: AFRL/RW. Funding: \$7,500. [ANT]

“Airborne Application of Gravity Gradiometry for Navigation.” Sponsor: AFRL/RV. Funding: \$7,500. [ANT]

KING, PAUL I.

“Pulse Detonation Engine Wave Propagation Studies.” Sponsor: AFRL/RZ. Funding: \$10,000.

KUNZ, DONALD L.

“Dynamics Modeling and Simulation of Automated Aerial Refueling.” Sponsor: AFRL/RB. Funding: \$18,000.

“High-Fidelity Aeroelastic Analysis for Flexible-Wing MAV’s.” Sponsor: AFOSR. Funding: \$19,125.

“Physics-Based Approach to Helicopter Rotor Smoothing.” Sponsor: US ARMY RDECOM. Funding: \$15,000.

MALL, SHANKAR

“Nanocomposites as Lightweight Electronic Enclosures for Satellites’ Applications.” Sponsor: SAF. Funding: \$24,000.

MAPLE, RAYMOND C., Lt Col

“Computational Modeling of Store Trajectories.” Sponsor: 746 SK. Funding: \$15,000.

“Fluid-Structure Interaction in Low Reynolds Number Flapping Wing Flight.” Sponsor: AFRL/RB. Funding: \$8,515.

PALAZOTTO, ANTHONY N.

“Development of a New Technique for Determining the Strain Dependent Damping and Stiffness Characteristics of Hard Coatings.” Sponsor: AFRL/RZ. Funding: \$31,000.

“Evaluation of Nonlinear Movement in Micro Air Vehicles.” Sponsor: AFRL/RB. Funding: \$29,500.

“Hypervelocity Impact Gouge Mitigation and Wear Prediction.” Sponsor: AFOSR. Funding: \$100,000.

REEDER, MARK F.

“Characterization of Flapping-Wing Micro Air Vehicle Kinematics.” Sponsor: AFRL/RB. Funding: \$30,000.

“Continued Investigation of ‘Clean Seeding’ Methods for Particle Image Velocimetry in Closed Circuit Wind Tunnels.” Sponsor: AFRL/RB. Funding: \$5,000.

“Low Temperature Ablation Experiments and Analysis.” Sponsor: AFRL/RB. Funding: \$22,500.

RUGGLES-WRENN, MARINA B.

“Effect of Dense Monazite Fiber Coating on Mechanical Behavior of an Oxide-Oxide Ceramic Matrix Composite at Elevated Temperatures in Air and Steam Environment.” Sponsor: AFRL/RZ. Funding: \$7,000.

“Effects of Steam Environment on Mechanical Behavior of SiC/SiC Ceramic Matrix Composites at Elevated Temperatures.” Sponsor: AFRL/RX. Funding: \$10,000.

“Fiber Metal Laminate (FML) as Replacement Structure for Sustainment.” Sponsor: AFRL/RB. Funding: \$34,456.

“Time (Rate) – Dependent Behavior of a Shape Memory Polymer Matrix Composite at Elevated Temperatures.” Sponsor: AFRL/RX. Funding: \$5,000.

SHEARER, CHRISTOPHER M., Lt Col

“Flight Dynamics and Control of High Altitude Long Endurance Aircraft.” Sponsor: AFRL/RB. Funding: \$15,000.

5.1.4. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [] if applicable.

BLACK, JONATHAN T.

Black, Jonathan T.; Smith, Suzanne Weaver; Leifer, Jack; and Larry J. Bradford, “Local Testing and Reduced Model Validation of Thermal-Formed Thin Film Polyimide Panels,” *Mechanical Systems and Signal Processing*, Vol. 22, Iss. 6, Aug. 2008, pp. 1412–1426.

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5.1.5. REFEREED CONFERENCE PUBLICATIONS

Note: Research Center affiliations are listed in [] if applicable.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

REEDER MARK F.

Polanka, M., Anthony, R., Bogard, D., and Reeder, M., “Determination of Cooling Parameters for a High Speed, True Scale, Metallic Turbine Vane Ring,” GT2008-50281, ASME Gas Turbine Technical Congress and Exposition 2008, Berlin, Germany, 9-13 June 2008.

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SHEARER, CHRISTOPHER M., Lt Col

Hall, D., Shearer, C.M., "Demonstrative Maneuvers for Aircraft Agility Prediction," *AIAA Guidance, Navigation, and Control Conference and Exhibit*, 18-21 Aug, 2008, Honolulu, HI, USA.

Devuono, A., Shearer, C.M., "Flight Dynamic Response of HALE Aircraft to KC-135 Flowfield," *AIAA Guidance, Navigation, and Control Conference and Exhibit*, 18-21 Aug, 2008, Honolulu, HI, USA.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF REVIEWED ABSTRACT

BLACK, JONATHAN T.

Black, J.T., Swenson, E.D., and L. George, "Extracting 3D Mode Shapes of FalconSAT-5 Structural Engineering Model," 49th AIAA/ASME/ASCE/AHS/ASC Conference on Structures, Structural Dynamics and Materials, Schaumburg, IL, Apr. 2008, AIAA Paper 2008-1851.

Black, J., Leifer, J., and S.W. Smith, "Global Static Testing and Model Validation of Thermal-Formed Thin Film Polyimide Panels," 49th AIAA/ASME/ASCE/AHS/ASC Conference on Structures, Structural Dynamics and Materials, 8th Gossamer Spacecraft Forum, Schaumburg, IL, Apr. 2008, AIAA Paper 2008-2137.

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BRANAM, RICHARD D., Lt Col

McCall, J. and Branam, R., "Effect of Radial Curvature in Rockets on Film Cooling Adiabatic Effectiveness and Jet Width," Proceedings of ASME 2008 International Mechanical Engineering Congress and Exposition, October 31-November 6, 2008, Boston, USA.

Kesenek, C. and R. Branam. "Contamination Study of Micro Pulsed Plasma Thrusters," AIAA Aerospace Sciences Conference, Reno, NV 7-10 January 2008.

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Carr, R., Camberos, J. and Branam, R., "Modifying the Continuum Constitutive Relations for Non-Equilibrium Using Entropy Generation," DSMC: Theory, Methods and Applications, Santé Fe, NM 30 September – 3 October 2007.

CANFIELD, ROBERT A.

- Bond, Vanessa; Canfield, Robert A.; Blair, Maxwell; and Suleman, Afzal, "Aeroelastic Scaling of the Goland Wing for Verification on a Joined-Wing Aircraft," AIAA-2008-6073, 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Victoria, British Columbia, September 12, 2008.
- Roberts, Ronald; and Canfield, Robert A., "Large- Scale Multidisciplinary Validation of Enriched Multipoint Cubic Approximations," AIAA-2008-5800, 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Victoria, British Columbia, September 11, 2008.
- Wickert, Douglas; Canfield, Robert A.; and Reddy J.N., "Continuous Sensitivity Analysis of Fluid-Structure Interaction Problems using Least-Squares Finite Elements," AIAA-2008-5931, 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Victoria, British Columbia, September 11, 2008.
- Rasmussen, Cody; Canfield, Robert A.; and Reddy J.N., "Advantages and Disadvantages of a Simultaneously Coupled Least-Squares Finite Element Formulation for Fluid- Structure Interaction," AIAA-2008-5859, 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Victoria, British Columbia, September 10, 2008.
- Bond, Vanessa; Canfield, Robert A.; Cooper, Jonathan; and Blair, Maxwell, "Aeroelastic Scaling for a Static Nonlinear Response of a Joined- Wing Aircraft ," AIAA-2008-5849, 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Victoria, British Columbia, September 10, 2008.
- Rasmussen, Cody; Canfield, Robert; and Reddy, J.N., "Nonlinear Transient Gust Response Using a Fully-Coupled Least- Squares Finite Element Formulation," AIAA-2008-1821, 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Schaumburg, Illinois, April 7–10, 2008.
- Wickert, Doug; Roberts, Ronald; and Canfield, Robert, "Least-Squares Continuous Sensitivity Equations for a Plate with an Elliptical Hole," AIAA-2008-1797, 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Schaumburg, Illinois, April 7–10, 2008.
- Wickert, Doug; and Canfield, Robert, "Least-Squares Continuous Sensitivity Calculations of a Nonlinear, Transient Aeroelastic Problem," AIAA-2008-1896, 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Schaumburg, Illinois, April 7–10, 2008.
- Roberts, Ronald; and Canfield, Robert, "Enriched Multipoint Cubic Approximations for Large Scale Optimization," AIAA-2008-2146, 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Schaumburg, Illinois, April 7–10, 2008.
- Park, G.J.; Kim, Y.; Kolonay, Raymond; Blair, Maxwell; and Canfield, Robert, "Nonlinear Dynamic Response Structural Optimization of a Joined- Wing Using Equivalent Static Loads," AIAA-2008-2159, 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Schaumburg, Illinois, April 7–10, 2008.

GREENDYKE, ROBERT B.

- Claycomb, A., Greendyke, R.B., "Extending CFD Modeling to the Transition Regime by Enhanced Thermophysical Modeling," 40th AIAA Thermophysics Conference, Seattle, WA, June 2008.
- Camberos, J.A., Greendyke, R.B., Lambe, L.A., "On Direct Simulation Quasi-Monte Carlo Methods", 40th AIAA Thermophysics Conference, Seattle, WA, June 2008.
- Callaway, D.W., Reeder, M.F., Greendyke, R.B., "Experimental Studies of Low Temperature Ablation Using Dry Ice", 15th AIAA International Space Planes and Hypersonic Systems and Technologies Conference, Dayton, OH, April, 2008.

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KUNZ, DONALD L.

Kunz, D.L. and Newkirk, M.C., "A Generalized Dynamic Balancing Procedure for the AH-64 Tail Rotor," AHS International 64th Annual Forum and Technology Display, Montreal, Quebec, Canada, April 2008.

Kunz, D.L. "Validation of a Generalized Direct Approach for Analysis of Multibody Dynamic Systems," 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Schaumburg, Illinois, April 2008.

McClung, A.M., Maple, R.C., Kunz, D.L., and Beran, P.S., "Examining the Influence of Structural Flexibility on Flapping Wing Propulsion," 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference, Schaumburg, Illinois, April 2008.

Newkirk, M.C. and Kunz, D.L., "Investigation of AH-64 Tail Rotor Balancing Issues," AHS Specialists' Conference on Aeromechanics, San Francisco, California, January 2008.

MALL, SHANKAR

Mall, S. and Lee, H., Fretting Fatigue Wear Behavior of Cu-Al Coating on Titanium alloy Substrate, Proceedings of the STLE/ASME International Joint Tribology Conference, October 22-24, 2007, San Diego, CA.

Mall, S., Ng, J. L. and Madhi, E., "Fretting Fatigue Behavior of Shot-Peened Ti-6Al-4V and IN100", Seventh International ASTM/ESIS Symposium on Fatigue and Fracture Mechanics to be held in Tampa, Florida, USA, on November 14-16, 2007.

Mall, S., Ahn, J-M., "Effects of Cyclic Frequency on the Fatigue Behavior of an Oxide/oxide Composite", 32nd International Conference and Exposition on Advanced Ceramics and Composites, January 27 - 31, 2008, Daytona Beach, Florida.

Katwyk, D. W., Mall, S., Bolick, R., Kelkar, A. D. and Davis, D. C., "Tension-Compression Fatigue Behavior of IM7/Epon 862 Fabricated using VARTM Process", Proceeding of AIAA/ASME/ASCE/AHS/ASC, Structures, Structural Dynamics and Material Conference, 4-9 April 2008, Chicago, IL.

REEDER, MARK F.

Callaway, D., Reeder, M., Greendyke, R., Experimental Studies of Low Temperature Ablation Using Dry Ice, AIAA Paper 2008-2554, 15th AIAA International Space Planes and Hypersonic Systems and Technologies Conference, Dayton, OH April 28-May 1, 2008.

Greene, B., Reeder, M., Crafton, J., Characterizing Dry Ice Particle Response for Clean Seeding PIV Applications, 26th AIAA Aerodynamic Measurement Technology and Ground Testing Conference, Seattle, WA, 23-26 June 2008.

SWENSON, ERIC, D., Lt Col

Roman T. Underwood, Eric D. Swenson, and Som R. Soni, "Structural Health Monitoring of Aerospace Applications with Restricted Geometry," Proceedings of SPIE's 15th International Symposium on Smart Structures and Materials, March 2008, San Diego, CA.

Jonathan T. Black, Lynnane George, and, Eric D. Swenson, "Measuring and Modeling 3D Mode Shapes of FalconSAT-5 Structural Engineering Model", 49th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials, 7 - 10 April 2008, Schaumburg, IL.

TORVIK, PETER J.

Tovik, P. J., "Coatings for Enhanced Passive Damping," (invited paper) *Proceedings, 32nd International Conference & Exposition on Advanced Ceramics & Composites*, Daytona Beach, Jan 27-Feb 1, 2008.

WIESEL, WILLIAM E.

W. Wiesel, "KAM Tori Construction Algorithms", *Advanced Maui Optical Space Surveillance Conference*, Wiliea, Maui, Hawaii, September 2008.

5.1.6. SUBSTANTIAL CONSULTATIONS

HARMON, FREDERICK G., Lt Col

Harmon, Frederick G, Heavy Fuel Engine testing, AFRL/Center for Rapid Product Development (CRPD), assisted CRPD in fabricating wiring harnesses and a test stand to run initial tests on a D-Star Engineering heavy fuel engine, an undergraduate intern (Ohio Space Grant) helped with the testing in the summer of 2008.

Harmon, Frederick G., Route Surveillance team, AFRL/Center for Rapid Product Development (CRPD), one of the faculty "advisors" for the route surveillance team. The team consists of aeronautical engineering, electrical engineering, and systems engineering students. Helped support the flight tests in May 08 at Camp Atterbury.

HUFFMAN Jr., RICHARD E., Maj

Huffman Jr., Richard E., "Ejection Seat Contract Requirements Research for the F-35," ASC/ENFC, 28-29 Aug 2008.

KUNZ, DONALD L.

Kunz, Donald L., Subject Matter Expert, Technology Readiness Assessment, Independent Review Panel, (subject of this panel may not be disclosed), Jan-Oct. 2008.

LIEBST, BRADLEY S.

Liebst, Bradley S., "Technical Expert Advisor to Gen Mark Matthews (SIB President)," Safety Investigation Board (SIB) for 31 July 2008 F-15 Accident at Nellis AFB, 21 Aug - 4 Sep 2008.

SHEARER, CHRISTOPHER M., Lt Col

Shearer, Christopher M., "Very Flexible Aircraft Flight Dynamics and Control, Computational and Experimental Advisor," Defense Advanced Research Projects Agency, Vulture Program, Aug 2008 - present.

SWENSON, ERIC, D., Lt Col

Swenson, Eric D. and Black, Jonathan T., "FalconSat V Redesign due to Significant Changes in Payload Design," Jan-May, 2008.

5.1.7. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

BLACK, JONATHAN T.

Welty, N.F., Rohe, W.C., Roach, N.R., Black, J.T., and J. Walter, "Systems Engineering Approach to Development of a Research Testbed for Spacecraft Dynamics," 33rd AIAA Dayton-Cincinnati Aerospace Sciences Symposium, Dayton, OH, Mar. 2008.

CANFIELD, ROBERT A.

General Program Chair, *12th AIAA/ISSMO Symposium on Multidisciplinary Analysis and Optimization*, Victoria, British Columbia, September 10–12, 2008.

“Large-Scale Optimization and Continuous Sensitivity Equations for Coupled Aero-Structural Systems,” AFOSR Computational and Applied Math Program Review, Arlington, Virginia, August 13, 2008.

“Distributed Actuation System for a Flexible In-plane Morphing Wing,” NATA RTA Advanced Course on Morphing Aircraft: Materials, Mechanisms and Systems, *Instituto Superior Técnico*, Lisbon, Portugal, 20 November 2008.

COBB, RICHARD G.

Crouse, J. D., Blue P. A., Cobb, R. G., and Mears, M., “Cursor-on-Target Control for Semi-autonomous UAS”, AIAA Guidance, Navigation, and Control Conference, HI, Aug 2008.

PALAZOTTO, ANTHONY N.

Reed, S. and Palazotto, A., “Determining material properties of nonlinear materials from transient response”, presented at the Intl. Mechanical Engineering Congress and Exposition, Seattle, WA. November 11-15, 2007.

Abu Al-Rub, R., Voyiadjis, G., Palazotto, A., “Microdamage constitutive model and numerical simulation of perforation targets by projectiles”, presented at the Intl. Mechanical Engineering Congress and Exposition, Seattle, WA. November 11-15, 2007.

Gardenier. and Palazotto, A., ‘ An experimental technique for property evaluation of metals at intermediate strain rates’, presented at the 33rd annual Dayton- Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 4, 2008.

Chmiel, A., and Palazotto, A.,” Material based finite element wear simulations”, presented at the 33rd annual Dayton- Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 4, 2008.

Lee., and Palazotto, A., “Analysis of multi-layered materials under high velocity impact using CTH”, presented at the 33rd annual Dayton- Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 4, 2008.

Hale, C. and Palazotto, A., “Consideration of wear at velocities greater than 200m/sec”, presented at the 33rd annual Dayton- Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 4, 2008.

Davidson, R., and Palazotto, A.,” Sensitivity of digital image correlation to subset and step sizes”, presented at the 33rd annual Dayton- Cincinnati Aerospace Science Symposium, Dayton, Ohio, March 4, 2008.

Larson, R., Palazotto, A., and Baker ,W., “Analysis of wave propagation in monolithic and functionally graded Ti-TiB plates subject to impact loading”, presented at the AIAA SDM conference, Schaumburg, Ill., April 7-10, 2008.

Hale, C., and Palazotto, A., “ Consideration of wear at velocities greater than 200m/sec”, presented at the AIAA SDM conference, Schaumburg, Ill., April 7-10, 2008.

Pai, F., and Palazotto, A., “Amplitude frequency modulation method for identification of nonlinear structural vibration”, presented at the AIAA SDM conference, Schaumburg, Ill., April 7-10, 2008.

TORVIK, PETER J.

Torvik, P. J., *On the Determination of Material Damping*, Prepared for Universal Technology Corporation, May 2008, 143 pp. Also to appear as AFRL Technical Report.

5.2. DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING

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5.2.1	<u>DOCTORAL DISSERTATIONS</u>	59
5.2.2	<u>MASTER'S THESES</u>	60
5.2.3	<u>GRADUATE RESEARCH PAPERS</u>	64
5.2.4	<u>FUNDED RESEARCH PROJECTS</u>	65
5.2.5	<u>FUNDED EDUCATIONAL PROJECTS</u>	68
5.2.6	<u>REFEREED JOURNAL PUBLICATIONS</u>	68
5.2.7	<u>REFEREED CONFERENCE PUBLICATIONS</u>	72
5.2.8	<u>SUBSTANTIAL CONSULTATIONS</u>	79
5.2.9	<u>BOOKS & CHAPTERS IN BOOKS</u>	81
5.2.10	<u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u>	82

5.2.1. DOCTORAL DISSERTATIONS

5.2.1.1. COMPUTER ENGINEERING (DCE)

HUBENKO, VICTOR P., *A Secure and Efficient Communications Architecture for Global Information Grid Users Via Cooperating Space Assets*. AFIT/DCE/ENG/08-02. Faculty Advisor: Dr. Richard A. Raines. Sponsor: N/A.

SAMBORA, MATTHEW D., *Statistical Methods for Image Registration and Denoising*. AFIT/DCE/ENG/08-14. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/RI.

5.2.1.2. COMPUTER SCIENCE (DCS)

AUGERI, CHRISTOPHER J., *On Graph Isomorphism and the Page Rank Algorithm*. AFIT/DCS/ENG/08-08. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFCA.

COUSIN, KEVIN, *A Unified Framework for Solving Multiagent Task Assignment Problems*. AFIT/DCS/ENG/08-01. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RV.

5.2.1.3. ELECTRICAL ENGINEERING (DEE)

BEARD, TODD W., *Application of Optimization Techniques to Spectrally Modulated, Spectrally Encoded Waveform Design*. AFIT/DEE/ENG/08-16. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/RV.

GIRARD, JASON A., *Material Perturbations to Enhance Performance of the Theile Half-Width Leaky Mode Antenna*. AFIT/DEE/ENG/08-04. Faculty Advisor: Dr. Michael J. Havrilla. Sponsor: AFRL/RV.

JOHNSON, STEVEN E., *Range Precision of LADAR Systems*. AFIT/DEE/ENG/08-15. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

KADING, GLEN A., *Piezo-Electrochemical Transducer Effect Intercalated Graphite Micro-Electromechanical Actuators*. AFIT/DEE/ENG/08-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RX.

LEMASTER, DANIEL A., *Statistical Methods for Polarimetric Imagery*. AFIT/DEE/ENG/08-18. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: AFRL/RD.

MARSH, DAVID W., *Composable Distributed Access Control and Integrity Policies for Query-Based Wireless Sensor Networks*. AFIT/DEE/ENG/08-06. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RV.

PHILLIPS, JAMES D., *Joint Image and Pupil Plane Reconstruction Algorithm based on Bayesian Techniques*. AFIT/DEE/ENG/08-07. Faculty Advisor: Dr. Stephen C. Cain. Sponsor: N/A.

RODRIGUEZ, BENJAMIN M., II, *JPEG Steganography Embedding Methods*. AFIT/DEE/ENG/08-20. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RI.

TURNER, REGINALD J., *A Wide Area Bipolar Cascade Resonant Cavity Light Emitting Diode for a Hybrid Range Intensity*. AFIT/DEE/ENG/08-12. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RV.

VENEMA, TODD M., *Closed-Loop Adaptive Optics Control in Strong Atmospheric Turbulence*. AFIT/DEE/ENG/08-21. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: N/A.

5.2.2. MASTER'S THESES

5.2.2.1. AERONAUTICAL ENGINEERING (GAE)

HANSEN, JOHN H., *Optimal Guidance of a Relay MAV for ISR Support Beyond Line-of-Sight*. AFIT/GAE/ENG/08-01. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/RB.

KLEEMAN, MARK P., *Extending CFD Modeling to Near-Continuum Flows Using Enhanced Thermophysical Modeling*. AFIT/GAE/ENY/08-M04. Faculty Advisor: Dr. Robert B. Greendyke. Sponsor: AFRL/RB.

5.2.2.2. COMPUTER ENGINEERING (GCE)

DUFFY, JEFFREY P., *Dynamic Behavior Sequencing in a Hybrid Robot Architecture*. AFIT/GCE/ENG/08-03. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RB.

ERICKSON, THEODORE J., *Digital Signal Processing Leveraged for Intrusion Detection*. AFIT/GCE/ENG/08-04. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFIOC.

FETZEK, CHARLES A., *Behavior-Based Power Management in Autonomous Mobile Robots*. AFIT/GCE/ENG/08-05. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RB.

FOGG, PAUL N., II, *Forensics Image Background Matching Using Scale Invariant Feature (SIFT) Transform and Speeded Up Robust Features (SURF)*. AFIT/GCE/ENG/08-02. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: DoD Cyber Crime Center.

JUDGE, MATTHEW G., *SHI(EL)DS: A Novel Hardware-Based Security Backplane to Enhance Security with Minimal Impact to System Operation*. AFIT/GCE/ENG/08-07. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/RB.

PHILLIPS, ADRIAN N., *A Secure Group Communication Architecture for a Swarm of Autonomous Unmanned Aerial Vehicles*. AFIT/GCE/ENG/08-09. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: USAFA/DFEC.

SAVIDGE, KEVIN J., *Priority Based Buffering over Multiple Lossy Links Using TCP Aware Layer Buffering*. AFIT/GCE/ENG/08-10. Faculty Advisor: Maj Scott Graham. Sponsor: AFRL/AFOSR.

5.2.2.3. CYBER OPERATIONS (GCO)

CARROLL, SEAN C., *Mission Impact Analysis Visualization for Enhanced Situational Awareness*. AFIT/GCO/ENG/08-01. Faculty Advisor: Lt Col Stuart H. Kurkowski. Sponsor: N/A.

EADDIE, MAMITA T., *Dialable Cryptography for Wireless Networks*. AFIT/GCO/ENG/08-02. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

GRIFFIN, JANE J., *DoD Role for Securing United States Cyberspace*. AFIT/GCO/ENG/08-03. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFIOC.

KOLBE, MICHAEL B., *An Analysis of Critical Infrastructure Control Systems and Vulnerabilities*. AFIT/GCO/ENG/08-04. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFCYBER (P).

ROBERTS, GREGORY R., *Evaluating Security and Quality of Service Considerations in Critical Infrastructure Communication Networks*. AFIT/GCO/ENG/08-05. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

ROQUE, PAUL N., *Performance Analysis of Effective Range and Orientation of UHF Passive RFID*. AFIT/GCO/ENG/08-06. Faculty Advisor: Dr. Richard A. Raines. Sponsor: CCR.

SKARDA, BRYAN E., *Operationalizing Offensive Social Engineering for the Air Force*. AFIT/GCO/ENG/08-07. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RH.

ZIMMERMAN, MATTHEW A., *Mitigating Reversing Vulnerabilities in .NET Applications Using Virtualized Software Protection*. AFIT/GCO/ENG/08-09. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFRL/RH.

5.2.2.4. COMPUTER SCIENCE/COMPUTER SYSTEMS (GCS)

AVITIA, SERAFIN, *Developing Network Situational Awareness Through Visualization of Fused Intrusion Detection System Alerts*. AFIT/GCS/ENG/08-23. Faculty Advisor: Lt Col Stuart H. Kurkowski. Sponsor: AFRL/RI.

BELUE, JOHN M., *Network Visualization Design using Prefuse Visualization Framework*. AFIT/GCS/ENG/08-03. Faculty Advisor: Lt Col Stuart H. Kurkowski. Sponsor: AFOSR.

BONHOFF, GEROD M., *Using Hierarchical Temporal Memory for Detecting Anomalous Network Activity*. AFIT/GCS/ENG/08-04. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RH.

COYNE, MARK E., *Hot Swapping Protocol Implementations in the OPNET Modeler Development Environment*. AFIT/GCS/ENG/08-05. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

DeYOUNG, MARK E., *Dynamic Protocol Reverse Engineering: A Grammatical Inference Approach*. AFIT/GCS/ENG/08-06. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFIOG.

DINES, DAVID M., *A Hybrid Communications Network Simulation-Independent Toolkit*. AFIT/GCS/ENG/08-08. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

FULTON, THOMAS F., *Change Detection for Processing of Angel Fire Imagery*. AFIT/GCS/ENG/08-09. Faculty Advisor: Juan R. Vasquez. Sponsor: AFRL/RH.

HANSEN, ANDREW P., *Cyber Flag: A Realistic Cyberspace Training Construct*. AFIT/GCS/ENG/08-10. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFRL/RH.

HOOVER, DAYLOND J., *A Hybrid Multi-Robot Control Architecture*. AFIT/GCS/ENG/08-02. Faculty Advisor: Dr. Gilbert L. Peterson. Sponsor: AFRL/RH.

HUNT, SHANNON E., *Developing a Reference Framework for Cybercraft Trust Evaluation*. AFIT/GCS/ENG/08-11. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFRL/RI.

JAMES, MOSES C., *Obfuscation Framework Based on Functionally Equivalent Combinatorial Logic Families*. AFIT/GCS/ENG/08-12. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFOSR.

JANG, BO YEON, *An Investigation into the Advantages, Mechanisms, and Developmental Challenges of Scripted Mobile Routing*. AFIT/GCS/ENG/08-13. Faculty Advisor: Maj Scott R. Graham. Sponsor: AFOSR.

LIDOWSKI, ROBERT L., *A Novel Communications Protocol Using Geographic Routing for Swarming UAVs Performing a Search Mission*. AFIT/GCS/ENG/08-14. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: USAFA.

LIN, ALAN C., *Software Obfuscation with Symmetric Cryptography*. AFIT/GCS/ENG/08-15. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFOSR.

McELROY, KELLY K., *Applying Automated Theorem Proving to Computer Security*. AFIT/GCS/ENG/08-16. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RH.

NORMAN, KENNETH E., *Algorithms for White-box Obfuscation Using Randomized Subcircuit Selection and Replacement*. AFIT/GCS/ENG/08-17. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFOSR.

NOWAK, DUSTIN J., *Exploitation of Self Organization in UAV Swarms for Optimization in Combat Environments*. AFIT/GCS/ENG/08-18. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: AFRL/RV.

ONTIVEROS, FERNANDO, *Development of a Night Vision Goggle Heads Up Display for Paratrooper Guidance*. AFIT/GCS/ENG/08-24. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RV.

PECARINA, JOHN M., *Creating an Agent Based Framework to Maximize Information Utility*. AFIT/GCS/ENG/08-19. Faculty Advisor: Dr. Kenneth M. Hopkinson. Sponsor: AFOSR.

WAY, RAYMOND S., *A Formal Specification and Proof of System Safety Using the Schematic Protection Model*. AFIT/GCS/ENG/08-21. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RV.

WILKIN, DORSEY C., *Cyber Ostfriesland: An Operation Against Critical Infrastructure*. AFIT/GCS/ENG/08-22. Faculty Advisor: Dr. Richard A. Raines. Sponsor: AFCYBER (P).

5.2.2.5. ELECTRICAL ENGINEERING (GE)

BRADY, JENNIFER L., *Limitations of a True Random Number Generator in a Field Programmable Gate Array*. AFIT/GE/ENG/08-01. Faculty Advisor: Dr. Rusty O. Baldwin. Sponsor: AFRL/RV.

CAKIROGLU, BORA, *Construction and Testing of Broadband High Impedance Ground Planes (HIGPS) for Surface Mount Antennas*. AFIT/GE/ENG/08-02. Faculty Advisor: Dr. Andrew J. Terzuoli. Sponsor: AFOSR.

CHABAK, KELSON D., *Conceptual Study of Rotary-Wing Microbotics*. AFIT/GE/ENG/08-03. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RW.

COSTELLO, CHRISTOPHER S., *Multi-Reference Frame Image Registration for Rotation, Translation, and Scale*. AFIT/GE/ENG/08-05. Faculty Advisor: Dr. Richard K. Martin. Sponsor: NASIC.

CROUCH, JAMES W., *Digital Fingerprinting of Field Programmable Gate Arrays*. AFIT/GE/ENG/08-06. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.

DELICAN, SABAN ATINC, *Electrically Steerable Diffraction Gratings for Hyperspectral Imaging: A Microelectromechanical System Design and Fabrication*. AFIT/GE/ENG/08-01. Faculty Advisor: Dr. Guna Seetharaman. Sponsor: N/A.

DOGRUL, MURAT, *Design and Optimization of Broadband High Impedance Ground Planes (HIGP) for Surface Mount Antennas*. AFIT/GE/ENG/08-08. Faculty Advisor: Dr. Peter J. Collins. Sponsor: AFOSR/EOARD.

EBCIN, SEDAT, *Tightly Integrating Optical and Inertial Sensors for Navigation Using the UKF*. AFIT/GE/ENG/08-09. Faculty Advisor: Lt Col Michael J. Veth. Sponsor: AFRL/MN.

HANCEY, BENJAMIN D., *Characterization and Implementation of a Real-World Tracking Algorithm on Field Programmable Gate Arrays with Kalman Filter Test Case*. AFIT/GE/ENG/08-10. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.

HOCKENBERRY, EUGENE B., *Hardware, Software and Data Analysis Techniques for SRAM-Based Field Programmable Gate Array Circuits*. AFIT/GE/ENG/08-11. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.

HOPP, STEPHEN J., *Coexistent Performance Characterization of the Simulated TTNT GMSK Waveform*. AFIT/GE/ENG/08-12. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/RW.

KENT, JASON T., *Comparative Classification of Low/High Value Receivers*. AFIT/GE/ENG/08-14. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/RV.

LENZ, THOMAS A., *Feature Aided Tracking in the Urban Environment*. AFIT/GE/ENG/08-16. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFRL/RV.

LIDDLE, ADAM J., *Sensitivity Analysis of AlGaIn/GaN HEMTs to Process Variation*. AFIT/GE/ENG/08-17. Faculty Advisor: Lt Col James A. Fellows. Sponsor: AFRL/RV.

LIEFER, NATHANIEL C., *Signal Processing Design of Low Probability of Intercept Waveforms*. AFIT/GE/ENG/08-18. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/RV.

NIELSEN, MICHAEL B., *Development and Flight of a Robust Optical-Inertial Navigation System Using Low-Cost Sensors*. AFIT/GE/ENG/08-19. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RW.

OZER, SONER, *Increasing Combat Aircraft Survivability Through Coherent Self-Protection Jammers*. AFIT/GE/ENG/08-20. Faculty Advisor: Maj Michael A. Saville. Sponsor: AFIT/CCR.

PIERCE, SCOTT J., *Context-Aided Tracking and Track Prediction in Aerial Video Surveillance*. AFIT/GE/ENG/08-21. Faculty Advisor: Lt Col Juan R. Vasquez. Sponsor: AFRL/RV.

POHL, ADAM J., *Multi-Objective UAV Mission Planning Using Evolutionary Computation*. AFIT/GE/ENG/08-22. Faculty Advisor: Dr. Gary B. Lamont. Sponsor: AFRL/RV.

POLICARPIO, TIMOTHY R., *Feasibility Study of Encoding Operational Mission Metadata into IPv6 Packet Headers*. AFIT/GE/ENG/08-23. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RH.

SCHEXNAYDER, CHRISTOPHER M., *Effects of Multipath and Oversampling on Navigation Using Orthogonal Frequency Division Multiplexed Signals of Opportunity*. AFIT/GE/ENG/08-25. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RV.

SEDAT, EBCIN, *Tightly Integrating Optical and Inertial Sensors for Navigation Using the UKF*. AFIT/GE/ENG/08-09. Faculty Advisor: Lt Col Michael J. Veth. Sponsor: AFRL/RW.

SHELNUTT, PAUL J., *Collision Avoidance for UAVs Using Optic Flow Measurement With Line of Sight Rate Equalization and Looming*. AFIT/GE/ENG/08-26. Faculty Advisor: Dr. Meir Pachter. Sponsor: AFRL/RB.

SHIRLEY, JASON W., *Hardware Algorithm Implementation for Mission Specific Processing*. AFIT/GE/ENG/08-27. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.

SOLIMAN, NEIL A., *Hyperspectral-Augmented Target Tracking*. AFIT/GE/ENG/08-28. Faculty Advisor: Maj Michael J. Mendenhall. Sponsor: AFRL/RV.

SPRECHER, AARON J., *Microfluidic Power Generation*. AFIT/GE/ENG/08-29. Faculty Advisor: Maj LaVern A. Starman. Sponsor: AFRL/RH.

STONE, SAMUEL J., *Anti-Tamper Method for Field Programmable Gate Arrays Through Dynamic Reconfiguration and Decoy Circuits*. AFIT/GE/ENG/08-30. Faculty Advisor: Dr. Yong C. Kim. Sponsor: AFRL/RV.

SUSKI, WILLIAM C., *Radio Frequency (RF) Fingerprinting Applied to Transient Signal Features from Commercial Communication Devices*. AFIT/GE/ENG/08-31. Faculty Advisor: Dr. Michael A. Temple. Sponsor: AFRL/RV.

SWANSON, SEVERIN M., *Evaluation of an OPNET Model for Tactical Targeting Network Technology (TTNT) Airborne Network*. AFIT/GE/ENG/08-32. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFRL/RW.

TAMAYO, ALFRED A., *Applying Frequency-Domain Equalization to Code-Division Multiple Access and Transform-Domain Communications Systems*. AFIT/GE/ENG/08-33. Faculty Advisor: Dr. Richard K. Martin. Sponsor: AFRL/RV.

TOWNSEND, JAMES D., *Improvement of ECM Techniques through Implementation of a Genetic Algorithm*. AFIT/GE/ENG/08-34. Faculty Advisor: Maj Michael A. Saville. Sponsor: AFRL/RV.

VITAYAUDOM, KEVIN P., *Analysis of Non-Uniform Gain for Control of a Deformable Mirror in an Adaptive-Optics System*. AFIT/GE/ENG/08-35. Faculty Advisor: Maj Jason D. Schmidt. Sponsor: AFRL/RD.

5.2.2.6. ELECTRO OPTICS (GEO)

GRUENTHER, ALEXANDER C., *An Image Based Bidirectional Reflectivity Distribution Function Experiment*. AFIT/GEO/ENG/08-M03. Faculty Advisor: Dr. Barry E. Mullins. Sponsor: AFRL/RV.

PLOURDE, MICHAEL D., *Limitations of Segmented Wavefront Control Devices in Emulating Optical Turbulence*. AFIT/GEO/ENG/08-02. Faculty Advisor: Maj Jason D. Schmidt. Sponsor: AFRL/RD.

5.2.2.7. SPACE SYSTEMS (GSS)

OZDEMIR, HALIL IBRAHIM, *Constellation Design of Geosynchronous Navigation Satellites Which Maximizes Availability and Accuracy Over a Specified Region of the Earth*. AFIT/GSS/ENG/08-01. Faculty Advisor: Dr. John F. Raquet. Sponsor: AFRL/RV.

5.2.3. GRADUATE RESEARCH PAPERS

5.2.3.1. INFORMATION WARFARE (ICW)

COSNOWSKI, CHARLES, *Defeating 802.11 Wireless Networks*. AFIT/ICW/ENG/08-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

GOOD, MICHAEL J., *Chinese National Strategy of Total War*. AFIT/ICW/ENG/08-02. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

HUNSBERGER, MICHAEL G., *A Methodology for Cybercraft Requirement Definition and Initial System Design*. AFIT/ICW/ENG/08-03. Faculty Advisor: Lt Col J. Todd McDonald. Sponsor: AFRL/RI.

MUEHE, TARA J., *Developing Future Air Force Cyber Leaders*. AFIT/ICW/ENG/08-06. Faculty Advisor: Maj Paul D. Williams. Sponsor: AF/A2F.

MURPHY, SEAN D., *Air Force Cyber Education: A Critical Analysis*. AFIT/ICW/ENG/08-07. Faculty Advisor: Dr. Richard A. Raines. Sponsor: HQ/8AF.

NEWBILL, RAYMOND R., *Intelligence Sharing, Fusion Centers, and Homeland Security*. AFIT/ICW/ENG/08-08. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

ORTH, PAUL, *Measuring the Operational Readiness of an Air Force Network Warfare Squadron*. AFIT/ICW/ENG/08-09. Faculty Advisor: Dr. Robert F. Mills. Sponsor: 315th NWS/CC.

RAUCH, DANIEL E., *Electronic Warfare for Cyber Warriors*. AFIT/ICW/ENG/08-10. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

REPIK, KEITH, *Defeating Adversary Network Intelligence Efforts with Active Cyber Defense Techniques*. AFIT/ICW/08-11. Faculty Advisor: Maj Paul D. Williams. Sponsor: AFCYBER.

WHITING, MICHAEL D., *The Great Firewall of China: Critical Analysis*. AFIT/ICW/ENG/08-12. Faculty Advisor: Dr. Robert F. Mills. Sponsor: N/A.

5.2.4. FUNDED RESEARCH PROJECTS

Note: Research Center affiliations are listed in [] if applicable.

BALDWIN, RUSTY O.

“Emerging Technologies (IA).” Sponsor: NSA. Funding: \$87,084. [CCR]

CAIN, STEPHEN C.

“Blind Deconvolution Methods for Polarimeters and Hyperspectral Imagers.” Sponsor: AFRL/RD. Funding: \$4,000.

COLLINS, PETER J.

“Enabling Technologies for Radar Scattering Measurements.” Sponsor: AFMC/A5JF. Funding: \$50,142.

“Field Emission Technology Investigations.” Sponsor: SAF. Funding: \$85,000.

“Low Frequency Synthesis through Wavelet Optimization.” Sponsor: AFMC/A5JF. Funding: \$25,000.

“RCS Methodology.” Sponsor: 746 TS. Funding: \$60,500.

GUSTAFSON, STEVEN C.

“Technical Support: Signal Processing/Pattern Recognition.” Sponsor: AFRL/RX. Funding: \$35,000.

HAVRILLA, MICHAEL J.

“Electromagnetic Analysis and Design of Non-Destructive Evaluation Systems.” Sponsor: AFRL/RX. Funding: \$115,000.

“Low Frequency High Temperature Material Characterization System.” Sponsor: AFMC/A5JF. Funding: \$50,000.

HOPKINSON, KENNETH M.

“A Context-Aware Middleware Architecture to Enable Large-Scale Networking.” Sponsor: SAF. Funding: \$107,666.

“Effective Utilization of Hybrid Communication Networks for Adaptive Military and Commercial Infrastructure.” Sponsor: AFOSR. Funding: \$38,051.

“HPC Summer Intern Support.” Sponsor: AFOSR. Funding: \$42,448.

KIM, YONG C.

“Anti-Tamper Methodology for Field Programmable Gate Arrays.” Sponsor: AFRL/RX. Funding: \$75,000.

KURKOWSKI, STUART H., Lt Col

“An Interactive Visualization Approach to Interface Network Centric Operators with Dynamic Network Infrastructure.” Sponsor: AFOSR. Funding: \$29,067.

“Toolkit for Visualizing Situation Scope.” Sponsor: AFRL/RI. Funding: \$76,738. [CCR]

MARTIN, RICHARD K.

“Fusion of Inertial Sensors and Signals of Opportunity for Unassisted Navigation.” Sponsor: AFOSR. Funding: \$34,507. [ANT]

“Technical Support: Cognitive Networks Research.” Sponsor: AFRL/RV. Funding: \$40,000.

McDONALD, J. TODD, Lt Col

“Architectural Framework for Evaluating General, Efficient, and Measurable Program Protection.” Sponsor: AFOSR. Funding: \$27,661. [CCR]

“Cyber Defense Applications Using Polymorphic Dynamic Decoy Network Topology.” Sponsor: 8AF/CYBER (P). Funding: \$50,000. [CCR]

MENDENHALL, MICHAEL J., Maj

“3D Shape Recognition Using QUEST Processing of LIDAR.” Sponsor: AFRL/RV. Funding: \$71,936.

“Hyperspectral Exploitation and HypeX Program Support.” Sponsor: AFRL/RV. Funding: \$30,000.

“Tracking Research for the Vigilant Eagle Program.” Sponsor: AFRL/RV. Funding: \$50,000.

MILLS, ROBERT F.

“Technical Support, Information/Cyber Operations.” Sponsor: AFIOC. Funding: \$25,010. [CCR]

MULLINS, BARRY E.

“Air Force Communications Systems Modeling.” Sponsor: AFCA. Funding: \$19,520. [CCR]

“Ground Mobility Objective Gateways.” Sponsor: AFRL/RW. Funding: \$25,000. [CCR]

“Technical Support: Cyber Operations.” Sponsor: AFRL/RI. Funding: \$20,000. [CCR]

PACHTER, MEIR

“Cooperative Control.” Sponsor: AFRL/RB. Funding: \$10,000.

“Cooperative Control and Estimation.” Sponsor: AFOSR. Funding: \$45,448.

“Feasibility Study of In-Situ Plant Dynamics Identification for a Satellite Payload.” Sponsor: SAF. Funding: \$45,000.

“New Navigation Techniques.” Sponsor: AFRL/RV. Funding: \$15,000. [ANT]

PETERSON, GILBERT L.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$110,800. [COA]

“CANIS-Related Navigation Research Projects for the ANT Laboratory.” Sponsor: AFRL/RV. Funding: \$100,000. [ANT]

“Technical Support: Autonomic Infusion.” Sponsor: AFRL/RV. Funding: \$152,676. [ANT]

RAINES, RICHARD A.

“Target Discovery, Sensor Fusion, and Mitigation Analysis.” Sponsor: AFRL/RY. Funding: \$60,000. [CCR]

RAQUET, JOHN F.

“ANT Center and Laboratory Support per ANT Center Appendix of MOA.” Sponsor: AFRL/RY. Funding: \$196,000. [ANT]

“Development of High Accuracy TSPI Systems.” Sponsor: 746 TS. Funding: \$45,900. [ANT]

“Image-Aided Aerial Refueling.” Sponsor: AFRL/RY. Funding: \$35,000. [ANT]

“Overcoming Geometric Deficiencies in Pseudolite Navigation Systems.” Sponsor: AFOSR. Funding: \$99,752. [ANT]

“Vision Aided Navigation and Control.” Sponsor: AFRL/RW. Funding: \$47,232. [ANT]

SCHMIDT, JASON D., Maj

“Advanced Wavefront Control.” Sponsor: AFRL/RD. Funding: \$30,000. [CDE]

STARMAN, LAVERNE A., Maj

“Design of Microscale Safe and ARM Devices.” Sponsor: AFRL/RW. Funding: \$32,500.

TEMPLE, MICHAEL A.

“EME Characterization and Exploitation.” Sponsor: Naval Surface Warfare Center (NSWC). Funding: \$73,549. [CCR]

“Phase II Support: RF-EW Systems.” Sponsor: AFRL/RY. Funding: \$55,000.

“Technical Support: Opportunistic Channel Access.” Sponsor: Laboratory for Telecommunications Sciences. Funding: \$47,480. [CCR]

TERZUOLI, ANDREW J., Jr.

“ECM Against Passive Radar.” Sponsor: AFRL/RY. Funding: \$20,000.

“Persistent Sensor Enhancement.” Sponsor: AFRL/RY. Funding: \$10,000.

“Remote Sensing and Communication for MASINT.” Sponsor: NASIC. Funding: \$150,000. [CMSR]

“Structural Antenna Electromagnetics.” Sponsor: AFRL/RB. Funding: \$10,000.

THOMAS, RYAN W., Capt

“Balancing Network and Mission Goals: A Cognitive Research Approach.” Sponsor: AFOSR. Funding: \$22,600.

VETH, MICHAEL J., Lt Col

“Autonomous Indoor Micro Air Vehicle.” Sponsor: AFRL/RW. Funding: \$125,000. [ANT]

“Synchronized Image-Inertial Data Collection and Processing System.” Sponsor: NGA. Funding: \$30,000. [ANT]

WILLIAMS, PAUL D., Maj

“AFIT Support for AFRL Cybercraft Project.” Sponsor: AFOSR. Funding: \$50,000. [CCR]

“Support to JCTD Vulnerability Assessment.” Sponsor: JIOWC. Funding: \$25,000. [CCR]

5.2.5. FUNDED EDUCATIONAL PROJECTS

Note: Research Center affiliations are listed in [] if applicable.

RAINES, RICHARD A.

“AFIT Transformation Chair.” Sponsor: DoD/OSD. Funding: \$200,000. [CCR]

“Anti-Tamper Software Protection Initiative Education, Outreach and Research.” Sponsor: AFRL/RV. Funding: \$200,000. [CCR]

“Development of a Federal Cyber Force at the Air Force Institute of Technology.” Sponsor: NSF. Funding: \$528,424. [CCR]

“IASP Tuition and Resource Support for the AFIT Center for Cyberspace Research.” Sponsor: NSA. Funding: \$312,848. [CCR]

5.2.6. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [] if applicable.

ANDEL, TODD R., Maj

Andel, T. R., and Yasinsac, A., “Surveying Security Analysis Techniques in MANET Routing Protocols,” *IEEE Communications Surveys & Tutorials*, Vol. 9, pp. 70-84, 4th Quarter CY 2007.

BALDWIN, RUSTY O.

Phillips, A. N., Mullins, B. E., Raines, R. A., and Baldwin, R. O., “A Secure Group Communication Architecture for Autonomous Unmanned Aerial Vehicles,” *Security and Communication Networks*, John Wiley and Sons, DOI: 10.1002/sec.55, pp. 1-15, 28 August 2008. [CCR]

Peterson, G. L., Raines, R. A., and Baldwin, R. O., “Digital Forensics Educational Needs in the Miami Valley Region,” *Journal of Applied Security Research*, Vol. 3, No. 3-4, pp. 429-439, June 2008. [CCR]

Jordt, G. J., Baldwin, R. O., Raquet, J. F., and Mullins, B. E., “Energy Cost and Error Performance of Range-Aware, Anchor-Free Localization Algorithms,” *Ad hoc Networks*, Vol. 6, No. 4, pp. 539-559, June 2008. [CCR]

Mann, C. R., Baldwin, R. O., Kharoufeh, J. P., and Mullins, B. E., “Energy-efficient Agent Replication for Finite-lifetime Resources in Wireless Sensor Networks with Time-constrained Queries,” *Mobile Computing and Communications Review*, Vol. 12, No. 2, pp. 31-39, April 2008. [CCR]

Dube, T. E., Birrer, B. D., Raines, R. A., Baldwin, R. O., Mullins, B. E., Bennington, R. F., and Reuter, C. E., “Hindering Reverse Engineering: Thinking Outside the Box,” *IEEE Security and Privacy*, Vol. 6, No. 2, pp. 58-65, March/April 2008. [CCR]

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LeMaster, D., and Cain, S., “Multichannel Blind Deconvolution of Polarimetric Imagery,” *Journal of the Optical Society of America A*, Vol. 25, No. 9, pp. 2170-2176, September 2008.

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Strong, D., and Cain, S., "Maximum a Priori Estimation of Focus Aberration in Imaging Systems," *Optical Engineering*, Vol. 46, No. 12, 127006, December 2007.

COLLINS, PETER J.

Bradley, C. J., Collins, P. J., Falconer, D. G., Fortuny-Guasch, J. and Terzuoli, A. J. Jr., "Evaluation of a Near-Field Monostatic-to-Bistatic Equivalence Theorem," *IEEE Transactions On Geoscience And Remote Sensing*, Vol. 46, No. 2, February 2008.

GUSTAFSON, STEVEN C.

Like, E. C., and Gustafson, S. C., "Robust Cardinal Interpolation," *The Open Cybernetics and Systemics Journal*, Vol. 2, pp. 230-235, July 2008.

HAVRILLA, MICHAEL J.

Hyde, M., and Havrilla, M., "A Nondestructive Technique for Determining Complex Permittivity and Permeability of Magnetic Materials using Two Flanged Rectangular Waveguides," *Progress in Electromagnetic Research*, Vol. 79, pp. 367-386, January, 2008.

Stewart, J., Havrilla, M., Berrie, J., Kornbau, N., Stenholm, G., and Albert, A., "Material Characterization using a Hand-held Network Analyzer," *Journal of Applied Electromagnetics and Mechanics*, Vol. 28, No. 9, pp. 95-100, September 2008.

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KIM, YONG C.

McDonald, J. T., Kim, Y. C., and Yasinsac, A., "Software Issues in Digital Forensics," *ACM SIGOPS OS Review, Special Issue on Forensics*, Vol. 42, No. 3, April 2008.

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Franz, T. P., Durkin, M., Williams, P. D., Raines, R. A., and Mills, R. F., "Defining IO Forces," *Air and Space Power Journal – Chinese Edition*, Vol. 2, No. 3, Summer 2008. [CCR]

Hamill, J. T., Deckro, R. F., Chrissis, J. W., and Mills, R. F., "Layered Social Networks," *IO Sphere, Professional Journal of Joint Information Operations*, pages 27-33, Winter 2008.

Mullins, B. E., Lacey, T. H., Mills, R. F., Trechter, J. M., and Bass, S. D., "How the Cyber Defense Exercise Shaped an Information-Assurance Curriculum," *IEEE Security and Privacy*, Vol. 5, No. 5, pp 40-49, Fall 2007. [CCR]

Okolica, J. S., Peterson, G. L., and Mills, R. F., "Using PLSI-U to Detect Insider Threats by Datamining Email," *Special Issue on Network Forensics of the International Journal of Security and Networks (IJSN)*, Vol. 3, No 2, pp. 114-121, 2008. [CCR]

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Augeri, C. J., Mullins, B. E., Baird, L. C., Bulutoglu, D. A., and Baldwin, R. O., "An Algorithm for Determining Isomorphism Using Lexicographic Sorting and the Matrix Inverse," *Congressus Numerantium, Utilitas Mathematica Publishing*, Vol. 184, pp. 97-120, December 2007. [CCR]

PACHTER, MEIR

Kish, B., Jacques, D., and Pachter, M., "Optimal Control of Sensor Threshold for Autonomous Wide Area Search Munitions," *AIAA Journal of Guidance, Control and Dynamics*, Vol. 30, No. 5, pp. 1239-1248, September-October 2007.

Pachter, M., Chandler, P. R., and Dharba, S., "Optimal MAV Operations in an Uncertain Environment," *International Journal of Robust and Nonlinear Control*, Vol. 18, Issue 2, pp. 248-262, January 2008.

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Peterson, G. L., Mayer, C. B., Kubler, T., "Ant Clustering with Locally Weighting Ant Perception and Diversified Memory," *Swarm Intelligence*, Vol. 2, No. 1, pp. 43-68, May 2008.

Peterson, G. L., and McBride, B. T., "Importance of Generalizability to Anomaly Detection," *Knowledge and Information Systems*, Vol. 14, No 3, pp. 377-392, March 2008.

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Wardell, D.C., and Peterson, G.L., "Fuzzy State Aggregation and Policy Hill Climbing for Stochastic Environments," *International Journal of Computational Intelligence and Applications*, Vol. 6, No. 3, pp. 413-428, 2007.

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RAQUET, JOHN F.

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SCHMIDT, JASON D., Maj

Venema, T. M., and Schmidt, J. D., "Optical Phase Unwrapping in the Presence of Branch Points," *Opt. Express*, Vol. 16, p. 6985, May 2008. [CDE]

Louthain, J. A., and Schmidt, J. D., "Anisoplanatism in Airborne Laser Communication," *Opt. Express*, Vol. 16, p. 10769-10785. July 2008. [CDE]

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Bradley, C. J., Collins, P. J., Falconer, D. G., Fortuny-Guasch, J., Terzuoli, Jr., A. J., "Evaluation of a Near-Field Monostatic to Bistatic Equivalence Theorem," *IEEE Trans. on Geoscience & Remote Sensing*, Vol. 46, No. 2, pp. 449-457, Feb 2008.

5.2.7. REFEREED CONFERENCE PUBLICATIONS

Note: Research Center affiliations are listed in [] if applicable.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

ANDEL, TODD R., Maj

Andel, T. R., and Yasinsac, A., "Automated Evaluation of Secure Route Discovery in MANET Protocols," in 15th International SPIN Workshop on Model Checking of Software (SPIN 2008), Los Angeles, CA, Aug 10-12, 2008; Vol. 5156 LNCS, pp. 26-41.

BALDWIN, RUSTY O.

Kelly, D. J., Raines, R. A., Baldwin, R. O., Mullins, B. E., and Grimaila, M. R., "A Framework for Classifying Anonymous Networks in Cyberspace," *Proceedings of the International Conference on Information Warfare and Security* (ICIW 2008), Athens, Greece, June 2008, pp. 221-232. [CCR]

Kelly, D. J., Raines, R. A., Baldwin, R. O., Mullins, B. E., and Grimaila, M. R., "Analyzing Anonymity in Cyberspace," *3rd International Conference on Information Warfare and Security*, Omaha NE, 24-25 April 2008, pp. 233-244. [CCR]

Gorsuch, J. E., Mullins, B. E., Raines, R. A., and Baldwin, R. O., "Analysis of Routing Worm Infection Rates on an IPv4 Network" *3rd International Conference on Information Warfare and Security*, Omaha NE, 24-25 April 2008, pp. 143-152. [CCR]

Hubenko, V. P., Raines, R. A., Baldwin, R. O., Mullins, B. E., Mills, R. F., and Grimaila, M. R., "A Secure and Efficient Satellite-based Multicast Architecture," *2008 IEEE Radio and Wireless Symposium*, Orlando, FL, January 2008, pp. 227-230. Finished 3rd place in "Best Student Paper" competition. [CCR]

CAIN, STEPHEN C.

Mantravadi, S., and Cain, S., "Analysis and Verification of Resolution Limits of a Hyperspectral Imager Using Computed Tomography," *Proceedings of the SPIE*, Vol. 7094, Aug 2008.

HAVRILLA, MICHAEL J.

Glover, B. B., Whites, K. W., Hyde, M. W., and Havrilla, M. J., "Complex Permittivity of Carbon Loaded Dielectric Sheets with Printed Metallic Square Rings," *2nd International Congress on Advanced Electromagnetic Materials in Microwaves and Optics*, pp. 762-764, Pamplona, Spain, September 2008.

Hyde, M., and Havrilla, M., "Electromagnetic Characterization of Two-Layer Dielectrics Using Two Flanged Rectangular Waveguides," *IEEE International Measurement Technology Conference Proceedings*, pp. 1648-1652, Vancouver, British Columbia, Canada, May 2008.

Havrilla, M., and Hyde M., "Dyadic Green's Function of an Imperfectly-Conducting Dual Waveguide Probe," *Asia Pacific Microwave Conference Proceedings*, pp. 741-744, Bangkok, Thailand, December 2007.

Bogle, A., Havrilla, M., Kempel, L., and Rothwell, E., "Electromagnetic Material Characterization Using a Rectangular Waveguide to Excite a Homogeneous Media in a Parallel-Plate Waveguide Using a Transverse Slot," *Antenna Measurement Techniques Association (AMTA) Conference Proceedings*, pp. 102-105, St. Louis, MO, November 2007.

McGuirk, J., Havrilla, M., Collins, P., and Hilderbrand, G., "A Three-Short Focused-Beam Calibration Technique for Material Characterization Measurements," *Antenna Measurement Techniques Association (AMTA) Conference Proceedings*, pp. 122-126, St. Louis, MO, November 2007.

HOPKINSON, KENNETH M.

Oimoen, S.C., Peterson, G.L., Hopkinson, K.M., "Network Formation Using Ant Colony Optimization – A Comparative Analysis," *IEEE Sixth International Conference on Ant Colony Optimization and Swarm Intelligence (ANTS) 2008*, Brussels, Belgium, pp. 405-406, 22-24 September 2008.

Wilkins, D.C., Kolbe, M.B., Raines R.A., Williams, P.D., Hopkinson, K., "Designing and Implementing a Critical Infrastructure Lab for Educational Research", *3rd International Conference on Information Warfare and Security*, Omaha, NE, USA., pp. 1-5. [CD], 24-25 April 2008. [CCR]

Kolbe, M.B., Wilkin, D.C., Williams, R.A., Raines, R.A., Hopkinson, K., "Taxonomy of Critical Infrastructure Control System Effects," *3rd International Conference on Information Warfare and Security*, Omaha, NE, USA., pp. 1-5. [CD], 24-25 April 2008. [CCR]

Wilkins, D.C., Kolbe, M.B., Raines R.A., Williams, P.D., Hopkinson, K., "Cyberspace Policies and Politics for Critical Infrastructure," *2nd IFIP WG 11.10 International Conference on Critical Infrastructure Protection*, Arlington, VA, USA, pp. 1-6, 16-19 March 2008. [CCR]

KIM, YONG C.

Paul, J., Stone, S., Kim, Y. C., and Bennington, R., "A Method and FPGA Architecture for Real-Time Polymorphic Reconfiguration," *IEEE International Conference on Field Programmable Technology (ICFPT November, 2007)*, pp. 65-72, Yokohama, Japan.

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LAMONT, GARY B.

Peterson, M., Lamont, G., and Moore, F., "Variation Operator Performance for Evolved Image Reconstruction Transforms," *IEEE International Conference on Systems, Man, and Cybernetics (SMC 2007)*, Montreal, Canada, October 2007.

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Ozemir, H. I., Raquet, J. F., and Lamont, G. B., “*Design of a Regional Navigation Satellite System Constellation Using Genetic Algorithms*,” Savannah, GA, August, 2008. [ANT]

MARTIN, RICHARD K.

Haker, M., R. Martin, K., and Chakravarthy, V., “Comparison of Hardware Implementation of Transform Domain Communications to Theoretical Results,” in *Proc. Military Communications Conference (MILCOM)*, Orlando, FL, October 2007.

Martin, R. K., Velotta, J. S., and Raquet, J. F., “Multicarrier Modulation as a Navigation Signal of Opportunity,” in *Proc. IEEE Aerospace Conference*, Big Sky, MT, March 2008. [ANT]

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Townsend, J. D., Saville, M. A., Hong, S. M., and Martin, R. K., “Simulator for Velocity Gate Pull-Off Electronic Countermeasure Techniques,” in *Proc. 2008 IEEE Radar Conf.*, Rome, Italy, May 2008.

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Skarda, B., Mills, R.F., McDonald, J.T., and Strouble, D., “Operationalizing Social Engineering for Offensive Cyber Operations,” *13th International Command and Control Research and Technology Symposium (ICCRTS)*, Bellevue WA, (Best Student Paper: Concepts, Theory, and Policy Track), June 2008. [CCR]

Grimaila, M.R., Mills, R.F., and Fortson, L.W., “An Automated Information Asset Tracking Methodology to Enable Timely Cyber Incident Mission Impact Assessment,” *13th International Command and Control Research and Technology Symposium (ICCRTS)*, Bellevue, WA, June 2008. [CCR]

Scheeres, J.W., Mills, R.F., and Grimaila, M.R., “Establishing the Human Firewall: Improving Resistance to Social Engineering Attacks,” *3rd International Conference on Information Warfare and Security (ICIW 2008)*, Omaha NE, April 2008. [CCR]

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Sorrels, D., Grimaila, M.R., Fortson, L.W., and Mills, R.F., “CIMIA: An Architecture for Near Real-Time Situational Awareness in Cyberspace,” *3rd International Conference on Information Warfare and Security (ICIW 2008)*, Omaha NE, April 2008. [CCR]

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5.2.8. SUBSTANTIAL CONSULTATIONS

Note: Research Center affiliations are listed in [] if applicable.

BALDWIN, RUSTY O.

Baldwin, Rusty O., “Data Analyst for Wound Treatment Study,” Wright-Patterson Medical Center (SGCQW), February-March 2008.

COLLINS, PETER J.

Collins, Peter J., “National RCS Measurement Facilities Certification Program (Range Certification Reviewer),” Range Commanders Council Signature Measurements Standards Group, December 2007-September 2008.

Collins, Peter J., “National RCS Test Facility Operations and Maintenance Source Selection (Technical Advisor),” Air Force Material Command, 46th Test Wing, Eglin AFB, FL, 4-15 February 2008.

Collins, Peter J., “Classified RCS Measurement Test Support (Technical Advisor),” Secretary of the Air Force, Office of Research, 12 August, 29 September – 3 October 2008.

Collins, Peter J., “Air Force Research Laboratory \$2.5M Radar Procurement (requirements evaluation and factory acceptance test observer),” Air Force Research Laboratory, Sensors Directorate, 22-29 March, 14 May 2008.

Collins, Peter J., “Classified Test Infrastructure Development (Proposal evaluator and Technical Advisor),” Air Force Research Laboratory, 6 May, 16-17 September 2008.

HOPKINSON, KENNETH M.

Thomas, Ryan W., and Hopkinson, Kenneth M., “Cognitive Radio Working Group (Advisor),” The Technical Cooperation Program, Cognitive Radio Workshop, Ottawa, ON and Washington, D.C., May through October 2008.

KIM, YONG C.

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LAMONT, GARY B.

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PACHTER, MEIR

Pachter, Meir, Consulting with AFRL/RBCA on a regular basis: Cooperative Control of UAVs.

Pachter, Meir, Consulting with AFOSR: Estimation, System Identification and Signal Processing, and Optimal Control.

RAINES, RICHARD A.

Raines, Richard A., Senior Mentor Forum, Commander, Air Force Cyber Command (Provisional).

Raines, Richard A., DoD Force Transformation Chair.

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Terzuoli, Andrew J., “Wright-Patterson Passive Radar Working Group (PRWG)” with NASIC/AD, January 2002 - Present.

Terzuoli, Andrew J., “Wright-Patterson Over the Horizon Radar (OTHR) Working Group” with NASIC/AD & DE, June 2007 - Present.

Terzuoli, Andrew J., “Harnessing Remote Sensed Data” with NASIC/SCX June 2007- Present.

Terzuoli, Andrew J., “RF Sensor Enhancement” with AFRL/SNR June 2003 – Present.

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TOUSSAINT, GREGORY J., Lt Col

Toussaint, Gregory J., “Small Business Innovation Research (SBIR) Technical Monitor, Topic Team Lead, and Evaluator,” Missile Defense Agency, October 2007 - September 2008.

5.2.9. BOOKS AND CHAPTERS IN BOOKS

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5.2.10. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

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PACHTER, MEIR

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Pachter, M., "Optimal Sensor Threshold Control and the Weapon Operating Characteristics for Autonomous Search and Attack Munitions," *48th Israel Annual Conference on Aerospace Sciences*, 2008, Tel Aviv, Israel, February 27-28.

Hansen, J., Pachter, M., and Jacques, D., "Optimal Guidance of a Relay MAV for ISR Support Beyond Line-Of-Sight," *33rd Annual Dayton-Cincinnati Aerospace Sciences Symposium*, Dayton, 4 March 2008. *Paper was the winner of Best Presentation.*

Pachter, M., Amt, J., and Raquet, J., "Accurate Positioning Using a Planar Pseudolites Array," *Proceedings of the IEEE/ION PLANS 2008 Conference*, Monterey, CA, May 6-8, 2008.

Gu, G., Pachter, M., and Chandler, P., "Target Motion Analysis Based on RF Power," *Proceedings of the American Control Conference*, June 11-13, 2008, Seattle, WA.

Pachter, M., "Optimal Guidance of a Relay Air Vehicle," *13th International Symposium on Dynamic Games and Applications*, Wroclaw, Poland, June 30-July 3, 2008.

Pachter, M., Ceccarelli, N., and Chandler, P., "Estimating an MAV's Heading and the Wind Speed and Direction Using GPS, Inertial and Air Speed Measurements," *AIAA Guidance, Navigation and Control Conference*, Honolulu, Hawaii, AIAA paper 2008-6311, 18-21 August 2008.

Girard, A., Swaroop, D., Pachter, M., and Chandler, P., "Autonomous Decision Making with Uncertainty for an Urban Intelligence, Surveillance, and Reconnaissance (ISR) Scenario," *AIAA Guidance, Navigation and Control Conference*, Honolulu, Hawaii, AIAA paper 2008-6310, 18-21 August 2008.

Pachter, M., Hansen, J., Jacques, D., and Blue, P., "Optimal Guidance of a Relay MAV for ISR Support Beyond Line-Of-Sight," *AIAA Guidance, Navigation and Control Conference*, Honolulu, Hawaii, AIAA paper 2008-698, 18-21 August 2008.

Nielsen, M., Racquet, J., Veth, M., and Pachter, M., "Development and Flight Test of a Robust Optical-Inertial Navigation System Using Low Cost Sensors," *ION GNNS 2008*, Savannah, GA, September 16-19, 2008. *Received Best Paper award.*

PETERSON, GILBERT L.

Oimoen, S.C., Peterson, G.L., and Hopkinson, K.M., "Network Formation using Ant Colony Optimization – A Comparative Analysis," *Sixth International Conference on Ant Colony Optimization and Swarm Intelligence*, Brussels, Belgium, pp. 405-406, September 2008.

- Dries, E., and Peterson, G.L., "Scaling Ant Colony Optimization with Hierarchical Reinforcement Learning Partitioning," in *GECCO 2008: Genetic and Evolutionary Computation Conference*, Atlanta, GA, pp. 25-32, August 2008.
- Duffy, J.P., and Peterson G.L., "An Abstract Behavior Representation for Robust, Dynamic Sequencing in a Hybrid Architecture," in *AAAI Spring Symposium – Architectures for Intelligent Theory-Based Agents*, Stanford University, CA, pp. 19-24, March 2008.
- Cousin, K., and Peterson, G.L., "Distributed Approach to Solving Constrained Multiagent Task Scheduling Problems," in *AAAI Fall Symposium – Regarding the "Intelligence" in Distributed Intelligent Systems (RIDIS)*, Washington, DC, pp. 42-48, November 2007.
- Rodriguez, B.M., and Peterson, G.L., "Multi-Class Classification Fusion Using Boosting for Identifying Steganography Methods," in *Multisensor, Multisource Information Fusion: Architectures, Algorithms, and Applications 2008 of the SPIE Symposium on Defense and Security*, Orlando, FL, March 2008, pp. 697407.01-697470.10, March 2008.
- Rodriguez, B.M., and Peterson, G.L., "Classifier Dependent Feature Preprocessing Methods," in *Mobile Multimedia/Image Processing, Security and Applications of the SPIE Symposium on Defense and Security*, Orlando, FL, pp. 69820S.01–69820S.12, March 2008.
- Karrels, D.R., and Peterson, G.L., "CyberCraft: Protecting Electronic Systems with Lightweight Agents," in *Cyberspace Research Workshop*, Shreveport, LA, pp. 58-62, November 2007.

RAINES, RICHARD A.

- Williams, P. D., Rogers, S. K., Mills, R. F., Raines, R. A., and Lacey, T. H., "Tomorrow Night," *IAnewsletter*, Information Assurance Technical Analysis Center, Vol. 11, No 2, pp. 10-15, Summer 2008.
- Lacey, T. H., Mills, R. F., Raines, R. A., Williams, P. D., and Rogers, S. K., "A Qualia Framework for Awareness in Cyberspace," *IAnewsletter*, Information Assurance Technical Analysis Center, Vol. 10, No. 3, pp. 12-16, Fall 2007.

SAVILLE, MICHAEL A., Maj

- Özer, S. , Saville, M. A., Collins, P. J., Terzuoli, A. J., and Martin, R. K., "Modeling of a Strike Formation with Coherent Self-protection Jammers," *IEEE Radar Conference*, Rome, Italy, 26-30 May 2008. [CCR]
- Townsend, J., Saville, M. A., Hong, S. M., and Martin, R. K., "Simulator for Velocity Gate Pull-Off Electronic Countermeasure Techniques," *IEEE Radar Conference*, Rome, Italy, 26-30 May 2008. [CCR]
- Townsend, J., Saville, M. A., Hong, S. M., Mayhew, O P., and Simpson, C., "Waveform Optimization for Electronic Countermeasure Technique Generation," *IEEE Radar Conference*, Rome, Italy, 26-30 May 2008. [CCR]
- Farooq, J., Temple, M. A., and Saville, M. A., "Exploiting Frequency Diverse Array Processing to Improve SAR Imaging," *IEEE Radar Conference*, Rome, Italy, 26-30 May 2008.
- Hong, S., Longbrake, M., Saville, M., and Wu, Z., "Non-coherent Cooperative Jammer for Multi-Platform Applications," *IEEE Radar Conference*, Rome, Italy, 26-30 May 2008. [CCR]
- Farooq, J., Saville, M. A., Temple, M. A., "Exploiting Frequency Diverse Array Processing to Improve SAR Image Resolution," 2008 Tri-Service Radar Symposium Waveform Diversity Workshop, Monterey, CA, June 23-17, 2008.
- Özer, S., Saville, M. A., Collins, P. J., Terzuoli, A. J., "Increasing the Survivability of a Strike Aircraft Formation through Self-Protection Jammers," *NATO Military Sensing Symposium, Panel 130 Sensor Electronic Technology*, Orlando, FL, 12-15 March 2008.

Dogrul, M., Collins, P. J., Saville, M. A., Sertel, K., and Terzuoli, A. J., "Improved Bandwidth Conformal Bow-tie Antennas Printed on Multi-scale Triangular-patch High-impedance Ground Planes – Simulation," *2008 Progress In Electromagnetics Research Symposium*, Cambridge, MA, 02-06 July 2008.

SCHMIDT, JASON D., Maj

Louthain, J. A., and Schmidt, J. D., "Integrated Approach to Airborne Laser Communication," Optics in Atmospheric Propagation and Adaptive Systems. *Proc. SPIE*. September 2008. [CDE]

Vitayaudom, K. P., Vincent, T. R., Schmidt, J. D., and Sanchez, D. J., "Analysis of Non-Uniform Gain for Control of a Deformable Mirror in an Adaptive-Optics System," Advanced Wavefront Control: Methods, Devices, and Applications VI. *Proc. SPIE*. August 2008. [CDE]

Plourde, M. D., and Schmidt, J. D., "Limitations of Segmented Wavefront Control Devices in Emulating Optical Turbulence," Advanced Wavefront Control: Methods, Devices, and Applications VI. *Proc. SPIE*. August 2008. [CDE]

TERZUOLI, ANDREW J., JR.

Cakiroglu, B., Collins, P. J., Havrilla, M. J., Sertel, K., and Terzuoli, A. J., "Multi-scale Triangular Patch High Impedance Ground Planes to Improve the Bandwidth of Conformal Bow-Tie Antennas – Fabrication," *PIERS 2008: Progress in Electromagnetics Research Symposium Proceedings*, Cambridge, MA, 2-6 July 2008.

Dogrul, M., Collins, P. J., Saville, M. A., Sertel, K., and Terzuoli, A. J., "Improved Bandwidth Conformal Bow-Tie Antennas Printed on Multi-scale Triangular-Patch High-Impedance Ground Planes – Simulation," *PIERS 2008: Progress in Electromagnetics Research Symposium Proceedings*, Cambridge, MA, 2-6 July 2008.

Cakiroglu, B., Collins, P. J., Havrilla, M. J., Sertel, K., and Terzuoli, A. J., "Fabrication of Multi-scale Triangular Patch High Impedance Ground Planes to Improve the Bandwidth of Conformal Bow-Tie Antennas," *EUROEM 2008: American-European Electromagnetics Symposium Proceedings*, Lausanne, SW, 21-25 July 2008.

Dogrul, M., Collins, P. J., Saville, M. A., Sertel, K., and Terzuoli, A. J., "Simulation of Improved Bandwidth Conformal Bow-Tie Antennas Printed on Multi-scale Triangular-Patch High-Impedance Ground Planes," *EUROEM 2008: American-European Electromagnetics Symposium Proceedings*, Lausanne, SW, 21-25 July 2008.

THOMAS, RYAN W., Capt

Thomas, R. W., "ACC/A8 Aerial Networking Workshop (Invited participant)," Langley AFB, VA, Dec. 2007.

Thomas, R. W., and Martin, R. K., "EW Countermeasures Roundtable (participant)," ACC Chief Scientist's office, Nov. 2007.

TRIAS, ERIC D., Maj

Trias, E., Navas, J., Ackley, E.S., Forrest, S., and Hermenegildo M., "Efficient Representations for Set-Sharing Analysis," Technical Report, TR-CS-2008-11, University of New Mexico. 2008.

Esponda, F., Trias, E., Ackley, E.S., and Forrest, S., "A Relational Algebra for Negative Databases," Technical Report, TR-CS-2007-18, University of New Mexico. 2007.

PROFESSIONAL ACTIVITIES

COLLINS, PETER J.

Chair: AFIT/ENG Low Observables Curriculum Committee.

Reviewer: *IEEE Transactions on Antennas and Propagation*.

Collins, Peter J., 781st Test Squadron CAM-Team (technical expert), “Outstanding Team” Recognition, Air Force Material Command, HQ Inspector General Unit Compliance Inspection (UCI), (UCI Report: HQ AFMC/IG PN 2008-02, 7 December 2007).

KIM, YONG C.

Review Committee Member: IEEE International Symposium on Circuits and Systems (ISCAS).

Reviewer: IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, IEEE Transactions on VLSI Systems, Journal of Electronic Testing Theory and Applications, and International Symposium on VLSI Design.

LAMONT, GARY B.

Associations of Computing Machinery (ACM): Reviewer: ACM Genetic and Evolutionary Computation Conference (GECCO).

Institute of Electrical and Electronics Engineers (IEEE): Technical Co-Chair, IEEE National Aerospace and Electronics Conference (NAECON), Dayton, OH, July, 2008; program committee: IEEE Congress on Evolutionary Computation (CEC) (on-going); reviewer: IEEE Transactions on Evolutionary Computing.

Member, program committee for Conference on Evolutionary Multi-Criterion Optimization (EMO); program committee for ICARIS.

Reviewer, MIT Journal on Evolutionary Computation; Conference on Evolutionary Multi-Criterion Optimization; Parallel Processing Systems in Nature Conference (PPSN).

Chair: AFIT/ENG Computer Science/Engineering Theory/Math Committee, 1980 to present.

Chair: AFIT/ENG Computer Architecture & Parallel Computation, 1990 to present.

Member: AI, Computer Engineering Committees, 1990 to present.

Member: AFIT Tau Beta Pi Executive Committee, 1992 to present.

MULLINS, BARRY E.

2008–present; Member, Technical Program Committee for the 4th International Conference on Information Warfare and Security (ICIW 2009).

2007–2008; Member, Technical Program Committee for the 3rd International Conference on Information Warfare and Security (ICIW 2008).

2008; Air Force representative to the Naval Postgraduate School’s curriculum working group for the 595 Information Warfare Masters Degree in Systems Engineering program.

2007–present; Member, Advisory Board for the Global Information Assurance Certification for the SANS Institute.

2007 – present; Member, Advisory Board for the Department of Electrical Engineering and Computer Science, University of Evansville.

PACHTER, MEIR

Faculty Research Council.

DAGSI Program Coordinating Committee (Control and Signal Processing).

Associate Editor of the Journal of Optimization Theory and Applications.

Session Chairman: 13th International Symposium on Dynamic Games and Applications, June 30-July 2008, Wroclaw, Poland.

Member of the following professional societies: IEEE, AIAA and ION; member of the IEEE committee "Engineers at Risk".

Reviewer for IEEE Transactions on Automatic Control, AIAA J. of Guidance, Control and Dynamics and International Journal of Control.

AFIT liaison to AFRL/RB.

Member of AFOSR Review Panel.

Consultant to AFRL/RBCA, AFRL/RY.

Member of AFRL/RBCA AFOSR *Star Team*.

AFIT NRC Postdoctoral Advisor.

Associate Fellow of the AIAA.

SAVILLE, MICHAEL A., Maj

Reviewer: *IET Electronic Letters, IEEE Transactions for Geoscience and Remote Sensing.*

Invited session co-chair for three sessions at the 2008 IEEE Inter. Symp. on Antennas and Propagation and the 2008 USNC/URSI (U.S. National Committee of the International Union of Radio Science) National Radio Science meeting, July 5-12, 2008, San Diego, California.

TERZUOLI, ANDREW J., JR.

Chair: Local Chapter, Joint IEEE Societies Antennas and Propagation Society (APS), Microwave Theory and Techniques (MTT), Geoscience and Remote Sensing (GRS).

Technical Paper Referee: *IEEE Transactions, IEE Proceedings.*

Dayton Development Coalition (DDC) Sensors Task Force.

Steering Committee: WPAFB MASINT Development Consortium.

VETH, MICHAEL J., Lt Col

Institute of Navigation Chapter President (2008-2009).

5.3. DEPARTMENT OF ENGINEERING PHYSICS

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5.3.1	<u>DOCTORAL DISSERTATIONS</u>	91
5.3.2	<u>MASTER'S THESES</u>	91
5.3.3	<u>FUNDED RESEARCH PROJECTS</u>	93
5.3.4	<u>FUNDED EDUCATIONAL PROJECTS</u>	95
5.3.5	<u>REFEREED JOURNAL PUBLICATIONS</u>	95
5.3.6	<u>REFEREED CONFERENCE PUBLICATIONS</u>	97
5.3.7	<u>SUBSTANTIAL CONSULTATIONS</u>	99
5.3.8	<u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u>	100

5.3.1. DOCTORAL DISSERTATIONS

5.3.1.1. ELECTRO-OPTICS (DS)

COLE, WALTER P., *Atmospheric Turbulence Effects Correction Factors for the Laser Range Equation*. AFIT/DS/ENP/08-02. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.

MASSEY, STEVEN M., *Simulated Brillouin Scattering Phase Conjugation in Fiber Optic Waveguides*. AFIT/DS/ENP/08-S03. Faculty Advisor: Maj Timothy H. Russell. Sponsor: HEL-JTO.

5.3.1.2. NUCLEAR ENGINEERING (DS)

McCLODY, JOHN W., *The Effect of Radiation on the Electrical Properties of Aluminum Gallium Nitride/Gallium Nitride Heterostructures*. AFIT/DS/ENP/08-01. Faculty Advisor: Dr. James C. Petrosky. Sponsor: AFOSR and AFRL/RV.

MOORE, ELIZABETH A., *Electrical Activation Studies of Silicon Implanted Aluminum Gallium Nitride with High Aluminum Mole Fraction*. AFIT/DS/ENP/08-D01. Faculty Advisor: Dr. Yung Kee Yeo. Sponsor: AFOSR.

PRINS, NICHOLAS J., *Distribution Iteration: A Robust Alternative to Source Iteration for Solving the Discrete Ordinates Radiation Transport Equations in Slab and XY-Geometries*. AFIT/DS/ENP/08-S04. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.

5.3.1.3. APPLIED PHYSICS (DSP)

KEE, PATRICK, *Electronic State Distributions of Y Ba₂Cu₃O_{7-x} Laser Ablated Plumes*. AFIT/DSP/ENP/08-S05. Faculty Advisor: Dr. Glen P. Perram. Sponsor: AFOSR.

5.3.2. MASTER'S THESES

5.3.2.1. APPLIED PHYSICS (GAP)

ARMBRUSTER, DAVID R., *Production and Characterization of Femtosecond-Laser-Induced Air Plasma*. AFIT/GAP/ENP/08-M01. Faculty Advisor: Lt Col Matthew J. Bohn. Sponsor: AFOSR.

DERBIS, RICHARD M., *Ultrafast Spectroscopy of Mid-Infrared Semiconductors Using the Signal and Idler Beams of a Synchronous Optical Parametric Oscillator*. AFIT/GAP/ENP/08-M02. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: N/A.

FONDREN, TERESA J., *Time Resolution of Collapse Events During the Propagation of Ultraviolet Filaments*. AFIT/GAP/ENP/08-M03. Faculty Advisor: Maj Thomas A. Niday. Sponsor: AFOSR.

GIVENS, RYAN N., *Demonstration of a Strategy to Perform Two-Dimensional Diode Laser Tomography*. AFIT/GAP/ENP/08-M04. Faculty Advisor: Dr. William F. Bailey. Sponsor: AFRL/RZ.

GOLDEN, ERIC M., *Modulation Response of Twin Optically Coupled Diode Lasers*. AFIT/GAP/ENP/08-M05. Faculty Advisor: Maj Thomas A. Niday. Sponsor: AFRL/RV.

GOODSPEED, ALLISON S., *Measuring Dispersion in Laser Cavity Mirrors using White-Light Interferometry*. AFIT/GAP/ENP/08-M06. Faculty Advisor: Lt Col Matthew J. Bohn. Sponsor: AFRL/RV.

POINDEXTER, JESSICA L., *Nano-Mechanical Properties of Heat Inactivated Bacillus Anthracis and Bacillus Thuringiensis Spores*. AFIT/GAP/ENP/08-M07. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AFMC/CX.

REICH, JOSEPH P., *Ionospheric Response to Solar Flares Using an Improved Version of SAMI2*. AFIT/GAP/ENP/08-M08. Faculty Advisor: Lt Col Christopher G. Smithtro. Sponsor: N/A.

RODGERS, LUKE P., *Collision Broadening Using Alkali-Filled, Hollow Core Fibers*. AFIT/GAP/ENP/07-S01. Faculty Advisor: Maj Timothy H. Russell. Sponsor: AFRL/RD.

SPRING, JUSTIN B., *Modeling of SBS Phase Conjugation in Multimode Step Index Fibers*. AFIT/GAP/ENP/08-M09. Faculty Advisor: Maj Timothy H. Russell. Sponsor: HEL/JTO.

5.3.2.2. ELECTRICAL ENGINEERING (GE)

CHIASSON, MARC A., *Passive Infrared Polarimetric Detection of an Airborne Target*. AFIT/GE/ENP/08-M01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RY.

5.3.2.3. ELECTRO-OPTICS (GEO)

CALLAHAN, JOHN M., *A Study of the Irradiance-and-Temperature-Dependence of Mid-Wave-Infrared (MWIR) Absorption in Indium Antimonide (InSb)*. AFIT/GEO/ENP/08-S01. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: N/A.

HAGG, MICHAEL T., *An Image Based Bidirectional Reflectivity Distribution Function Experiment*. AFIT/GEO/ENP/08-M03. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RY.

McATEE, KYLE R., *Survey of Contrast and Gain Control Techniques for Infrared Focal Planes under Laser Illumination*. AFIT/GEO/ENP/08-M04. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RY.

RASMUSSEN, JOSHUA D., *Image-Based Laser Jam Detection in Infrared Focal Plane Array Detectors*. AFIT/GEO/ENP/08-M05. Faculty Advisor: Dr. Michael A. Marciniak. Sponsor: AFRL/RX.

5.3.2.4. NUCLEAR ENGINEERING (GNE)

BLASY, BRYAN D., *Neutron Detection Utilizing Gadolinium Doped Hafnium Oxide Films*. AFIT/GNE/ENP/08-M02. Faculty Advisor: LTC David A. LaGrafte. Sponsor: AFRL/RD.

MATHER, DAVID E., *Discrete Counting of Short Lived Isotopes with Low Background Detectors*. AFIT/GNE/ENP/08-M03. Faculty Advisor: Dr. Kirk A. Mathews. Sponsor: N/A.

RAKES, KELLY D., *Evaluating the Response of Polyvinyl Toluene Scintillators Used in Portal Detectors*. AFIT/GNE/ENP/08-M04. Faculty Advisor: Dr. James C. Petrosky. Sponsor: DHS/DNDO.

SMITH, BRIANA J., *Near-Time Characterization of a Domestic Nuclear Event Using Gamma Spectroscopy*. AFIT/GNE/ENP/08-M06. Faculty Advisor: Dr. Charles J. Bridgman. Sponsor: DHS/DNDO.

5.3.2.5. MATERIALS SCIENCES (GMS)

GRUEN, GREGGORY J., *Time Dependent Annealing Study of Silicon Implanted Aluminum Gallium Nitride*. AFIT/GMS/ENP/08-J01. Faculty Advisor: Dr. Yung Kee Yeo. Sponsor: AFOSR.

5.3.2.6. COMBATING WEAPONS OF MASS DESTRUCTION (GWM)

HAWKINS, LESLIE S., *Micro-Etched Platforms for Thermal Inactivation of Bacillus Anthracis and Bacillus Thuringiensis Spores*. AFIT/GWM/ENP/08-M01. Faculty Advisor: Dr. Larry W. Burggraf. Sponsor: AF/A3S and AFNWCA (AT).

5.3.3. FUNDED RESEARCH PROJECTS

Note: Research Center affiliations are listed in [] if applicable.

BAILEY, WILLIAM F.

“Single Surface Multipactor.” Sponsor: AFRL/RD. Funding: \$30,000. [CDE]

BOHN, MATTHEW J., Lt Col

“Femtosecond Enhancement Cavity for High Average Power THz Generation.” Sponsor: AFOSR. Funding: \$28,600.

BUNKER, DAVID J.

“ONIR Ground Truth.” Sponsor: NASIC. Funding: \$140,160. [CMSR]

BURGGRAF, LARRY W.

“Role of Water in Heat Inactivation of Bacillus Anthracis Spores and Spores of Related Organisms.” Sponsor: AFNWCA. Funding: \$155,000.

CUSUMANO, SALVATORE J.

“Airborned Aero-Optic Laboratory.” Sponsor: HELJTO. Funding: \$200,760. [CDE]

“HELJTO Model & Simulation.” Sponsor: HELJTO. Funding: \$400,000. [CDE]

“High Energy Laser-Laser Communications Performance Assessments from Remotely-Sensed Measurements of Atmospheric Beam Scatter.” Sponsor: NSF. Funding: \$230,000. [CDE]

GROSS, KEVIN C.

“Novel Use of Advanced Sensors for Battlespace Characterizations.” Sponsor: SAF. Funding: \$49,000. [CMSR]

LAGRAFFE, DAVID A., LTC

“DTRA-AFIT Nuclear Partnership.” Sponsor: DTRA. Funding: \$50,000.

MARCINIAK, MICHAEL A.

“BRDF Measurement Research.” Sponsor: AFRL/RX. Funding: \$80,000.

“Infrared Counter-Countermeasure Research.” Sponsor: AFRL/RX. Funding: \$73,511.

MATTHEWS, KIRK A.

“AFTAC/TM-AFIT/EN MOA 2008 Support.” Sponsor: AFTAC. Funding: \$50,000.

PERRAM, GLEN P.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$100,300. [CDE]

“AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Laser Kinetics and Spectroscopy.” Sponsor: AFOSR. Funding: \$89,877. [CDE]

“Center of Excellence for Gas Phase Hybrid Lasers: Additional Student Support.” Sponsor: AFOSR. Funding: \$58,492. [CDE]

“Characterization of Excited Atomic Oxygen in RF and Microwave Discharges.” Sponsor: AFRL/RD. Funding: \$52,500. [CDE]

“Hazard Analysis for a Forward-Looking Interferometer.” Sponsor: NASA. Funding: \$19,995. [CDE]

“High Power Diode Pumped Alkali Vapor Lasers and Analog Systems.” Sponsor: AFRL/RD. Funding: \$176,000. [CDE]

“Iron Rose II Muzzle Flash Field Test.” Sponsor: NASIC. Funding: \$40,000. [CMSR]

“Measure High Priority Kinetic Rates for DPALS.” Sponsor: AFRL/RD. Funding: \$78,750. [CDE]

“Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase and Electric Lasers.” Sponsor: AFRL/RD. Funding: \$220,000. [CDE]

PETROSKY, JAMES C.

“Analysis of Thermal Flash Effects of Surfaces for Post-Event Nuclear Forensics.” Sponsor: DTRA. Funding: \$144,350.

“Support to NNSA for QUASPR Review.” Sponsor: DoE. Funding: \$9,200.

“Support to NTNFC: Nuclear Forensics of Interest.” Sponsor: DHS. Funding: \$52,000.

“Technical Research on Detection of Weapons of Mass Destruction.” Sponsor: DTRA. Funding: \$50,000.

RUSSELL, TIMOTHY H., Maj

“Stimulated Brillouin Scattering Phase Conjugation in Optical Fiber.” Sponsor: AFRL/RD. Funding: \$60,000. [CDE]

SMITHTRO, CHRISTOPHER G., Lt Col

“Observation and Modeling of the Mid-Latitude E- and F- Region Ionosphere during Solar X-Ray Flares.” Sponsor: AFOSR. Funding: \$5,675.

TUTTLE, RONALD F.

“Advanced Technical Intelligence Research Support.” Sponsor: NASIC. Funding: \$114,576. [CMSR]

“Advanced Sensor Integration Study.” Sponsor: OSD. Funding: \$14,000. [CMSR]

“Integration of a Sensor Package for Identifying Radical Extremist (INSPIRE).” Sponsor: West Virginia High Technology Consortium (WVHTC). Funding: \$44,308. [CMSR]

WEEKS, DAVID E.

“A Wigner Distribution Analysis of Scattering Dynamics.” Sponsor: AFOSR. Funding: \$20,000.

5.3.4. FUNDED EDUCATIONAL PROJECTS

Note: Research Center affiliations are listed in [] if applicable.

CUSUMANO, SALVATORE J.

“2008 AFIT Center for Directed Energy Summer Internship Program.” Sponsor: AFRL/RD. Funding: \$51,168. [CDE]

PETROSKY, JAMES C.

“GNE Student Support.” Sponsor: DTRA. Funding: \$82,910.

TUTTLE, RONALD F.

“Advanced Geospatial Intelligence Education.” Sponsor: NGA. Funding: \$756,000. [CMSR]

5.3.5. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [] if applicable.

BOHN, MATTHEW J., Lt Col

Christopher D. Stoik, Matthew J. Bohn, and James L. Blackshire, “*Nondestructive evaluation of aircraft composites using transmissive terahertz time domain spectroscopy*”, Optics Express 16, issue 21, pp.17039-17051 (2008).

BURGRAFF, LARRY W.

G. Li and L.W. Burggraf, “*Surface stress influences on nanopatterns formed in polystyrene films using a force-modulated nanohammer*”, Nanotechnology 19, article no. 095301 (6 pages) (2008).

Larry W. Burggraf, Eric V. Beck, Eric A. Stahlberg, and Jean-Philippe Blaudeau, “*A graphical unitary group approach-based hybrid density functional theory multireference configuration interaction method*”, Chemical Physics 349, pp. 158-169 (2008).

P. E. Adamson, X.F. Duan, L.W. Burggraf, M.V.Pak, C. Swalina, S. Hammes-Schiffer, “*Modeling positrons in molecular electronic structure calculations with the nuclear-electronic orbital method*”, Journal of Physical Chemistry A 112, pp. 1346-51 (2008).

GROSS, KEVIN C.

Kevin C. Gross and Glen P. Perram, “*The Phenomenology of High Explosive Fireballs from Fielded Spectroscopic and Imaging Sensors for Event Classification*,” International Journal of High Speed Electronics and Systems 18, pp. 19-29 (2008). [CMSR]

HENGHOLD, ROBERT L.

J. A. Raley, Y. K. Yeo, R. L. Hengehold, Mee-Yi Ryu, Y. Lu, and Pan Wu, “*Ferromagnetic Properties of Nickel Implanted $Al_{0.35}Ga_{0.65}N$* ,” J. Korean Physical Society 51, pp. 1707-1712 (2007).

J. A. Raley, Y. K. Yeo, R. L. Hengehold, and M. Y. Ryu, “*Magnetic Properties of Transition Metal Implanted ZnO Nanotips Grown on Sapphire and Quartz*,” J. Magnetism 13, pp. 19-22 (2008).

MARCINIAK, MICHAEL A.

B. T. Wysocki and M.A. Marciniak, “*Discrimination between electronic and optical blooming in an InSb focal plane array under high-intensity excitation*,” *Infrared Physics and Technology* 51, pp. 137-145 (2008).

MATHEWS, KIRK A.

K. A. Mathews and D. W. Gerts, “*Bayesian analysis for very-low-background counting of short-lived isotopes: Lowest Minimum Detectable Quantity*,” *Journal of Radioanalytical and Nuclear Chemistry* 276, No. 2, pp. 305-312 (2008).

MCCLORY, JOHN W., LTC

John W. McClory, James C. Petrosky, James M. Sattler, and Thomas A. Jarzen, “*An Analysis of the Effects of Low-Energy Electron Irradiation of AlGaIn/GaN HFETs*,” *IEEE Transactions on Nuclear Science*, vol. 54, pp. 1946-1952 (Dec 2007).

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PERRAM, GLEN P.

Grady T. Phillips and Glen P. Perram, “*Pressure broadening by argon in the hyperfine resolved $P(10)$ and $P(70)(17,1)$ transitions of $I_2 X^1\Sigma(O_g^+) \rightarrow B3\Pi(O_u^+)$ using sub-Doppler laser saturation spectroscopy*,” *J. Quantitative Spectroscopy and Radiative Transfer* 109, pp. 1875–1885 (2008).

Joseph L. Cox, Dean T. Cherer, and Glen P. Perram, “*Electronic Quenching of $Bi_2 A(0_u^+) v'=18-23$ by Rare Gases and Nitrogen*,” *Chemical Physics* 343, pp. 31–34 (2008).

Kevin C. Gross and Glen P. Perram, “*The Phenomenology Of High Explosive Fireballs from Fielded Spectroscopic And Imaging Sensors for Event Classification*,” *International Journal of High Speed Electronics and Systems* 18, pp. 19-29 (March 2008). [CMSR]

PETROSKY, JAMES C.

John W. McClory, James C. Petrosky, James M. Sattler, and Thomas A. Jarzen, “*An Analysis of the Effects of Low-Energy Electron Irradiation of AlGaIn/GaN HFETs*,” *IEEE Transactions on Nuclear Science*, vol. 54, pp. 1946-1952 (Dec 2007).

John W. McClory and James C. Petrosky, “*Temperature Dependent Electrical Characteristics of Neutron Irradiated AlGaIn/GaN HFETs*,” *IEEE Transactions on Nuclear Science*, vol. 54, pp. 1969-1974 (Dec 2007).

RANDALL, ROBB M., Maj

Robb M. Randall and Benjamin M. Herman, “*Using Limited Time Period Trends as a Means to Assign Attribution to Discrepancies in Microwave Sounding Unit Derived Tropospheric Temperature Time Series*,” *J. Geophysical Research*, vol. 113, D05105, doi: 10.1029/2007D008864 (2008).

RUSSELL, TIMOTHY H., Maj

S. M. Massey and T. H. Russell, “*Phase analysis of stimulated Brillouin scattering in long, graded-index optical fiber*,” *Opt Express* 16, 11496-11505 (2008). [CDE]

S. M. Massey, J. B. Spring, and T.H. Russell, “*Stimulated Brillouin scattering continuous wave phase conjugation in step-index fiber optics*,” *Opt. Express* 16, 10873-10885 (2008). [CDE]

SMITHRO, CHRISTOPHER G., Lt Col

R. A. Steenburgh, C. G. Smithro, and K. M. Groves, "Ionospheric scintillation effects on single frequency GPS," Space Weather, vol. 6, S04D02, doi: 10.29/2007SW000340 (2008).

C. G. Smithro and S. C. Solomon, "An improved parameterization of thermal electron heating by photoelectrons, with application to an X17 flare," J. Geophysical Research 113, A08307, doi: 10.1029/2008JA013077 (2008).

YEO, YUNG KEE

J. A. Raley, Y. K. Yeo, R. L. Hengehold, Mee-Yi Ryu, Y. Lu, and Pan Wu, "Ferromagnetic Properties of Nickel Implanted $Al_{0.35}Ga_{0.65}N$," J. Korean Physical Society 51, pp. 1707-1712 (2007).

J. A. Raley, Y. K. Yeo, R. L. Hengehold, and M. Y. Ryu, "Magnetic Properties of Transition Metal Implanted ZnO Nanotips Grown on Sapphire and Quartz," J. Magnetism 13, pp. 19-22 (2008).

5.3.6. REFEREED CONFERENCE PUBLICATIONS

Note: Research Center affiliations are listed in [] if applicable.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

BAILEY, WILLIAM F.

M. J. Krizo, S. J. Cusumano, R. J. Bartell, S. T. Fiorino, W.F. Bailey, R. L. Beauchamp, M. A. Marciniak, and K. P. Moore, "A worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths," SPIE Defense and Security Symposium, Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIV Orlando, FL, March 2008; Proc. SPIE volume 6966, article no. 696619 (12 pages) (2008). [CDE]

CUSUMANO, SALVATORE J.

Fiorino, S.T., Bartell, R.J. Krizo, M.J. Moore, K.P. and Cusumano, S.J. "Validation of a worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths," Proc. SPIE 7090-70900I (12 pages), SPIE Optics and Photonics, San Diego, CA, August 2008. [CDE]

Krizo, M.J., Cusumano, S.J. Bartell, R.J. Fiorino, S.T., Bailey, W.F, Beauchamp, R.L. Marciniak, M.A. and Moore, K.P. "A worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths," Proc. SPIE 6966, 696619 (12 pages) SPIE Defense and Security Symposium, Orlando, FL, March 2008. [CDE]

Fiorino, S.T., Bartell, R.J. Krizo, M.J. and Cusumano, S.J. "Propagation variability assessments of ship defense HEL and HPM performance in worldwide maritime boundary layer environments at wavelengths of 1.0642 μm , 2.141 μm , 3.16 mm and 12.2 cm," Proc. SPIE 6951, 69510G (12 pages) SPIE Defense and Security Symposium, Orlando, FL, March 2008. [CDE]

Fiorino, S.T., Bartell, R.J. Krizo, M.J. Caylor, G.L. Moore, K.P. Harris, T.R. and Cusumano, S.J. "A First Principles Atmospheric Propagation & Characterization Tool: The Laser Environmental Effects Definition and Reference (LEEDR)," Proc. SPIE 6878, 68780B (12 pages) SPIE Photonics West, Laser Applications in Science and Engineering (LASE), San Jose, CA, January 2008. [CDE]

FIORINO, STEVEN T., Lt Col

Fiorino, S.T., Bartell, R.J. Krizo, M.J. Moore, K.P. and Cusumano, S.J. "Validation of a worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths," Proc. SPIE 7090-70900I (12 pages), SPIE Optics and Photonics, San Diego, CA, August 2008. [CDE]

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Fiorino, S.T., Bartell, R.J. Krizo, M.J. and Cusumano, S.J. "Propagation variability assessments of ship defense HEL and HPM performance in worldwide maritime boundary layer environments at wavelengths of 1.0642 μm , 2.141 μm , 3.16 mm and 12.2 cm," Proc. SPIE 6951, 69510G (12 pages) SPIE Defense and Security Symposium, Orlando, FL, March 2008. [CDE]

Fiorino, S.T., Bartell, R.J. Krizo, M.J. Caylor, G.L. Moore, K.P. Harris, T.R. and Cusumano, S.J. "A First Principles Atmospheric Propagation & Characterization Tool: The Laser Environmental Effects Definition and Reference (LEEDR)," Proc. SPIE 6878, 68780B (12 pages) SPIE Photonics West, Laser Applications in Science and Engineering (LASE), San Jose, CA, January 2008. [CDE]

GROSS, KEVIN C.

Kevin C. Gross, Joseph Wymann, and Glen P. Perram, "Phenomenological Fireball Model for Remote Identification of High-Explosives," SPIE Proceedings Defense and Security Symposium, 656613 (2007). [CMSR]

MARCINIAK, MICHAEL A.

Krizo, M.J., Cusumano, S.J. Bartell, R.J. Fiorino, S.T., Bailey, W.F, Beauchamp, R.L. Marciniak, M.A. and Moore, K.P. "A worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths," Proc. SPIE 6966, 696619 (12 pages) SPIE Defense and Security Symposium, Orlando, FL, March 2008. [CDE]

PERRAM, GLEN P.

Bill Smith, Sr., Stanislav Kireev, Leanne West, Gary Gimmetstad, Larry Cornman, Wayne Feltz, Glen Perram, Taumi Daniels, "Interferometric radiometer for in-flight detection of aviation hazards," SPIE Proceedings of Optical Engineering and Applications, 70880A (2008). [CMSR]

G.Hager, J.McIver, D.Hostutler, G.Pitz, and G.Perram, "A Quasi-Two Level Analytic Model For End-Pumped Alkali Metal Vapor Laser," SPIE Proceedings of High Energy Laser Ablation, 700528 (2008). [CDE]

Greg A. Pitz and Glen P. Perram, "Pressure Broadening of the D1 and D2 lines in Diode Pumped Alkali Lasers," SPIE High Energy Laser Ablation, 700526 (2008). [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, "Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355 μm to 10.6 μm ," SPIE Defense and Security Symposium Proceedings 655104 (2007). [CDE]

Kevin C. Gross, Joseph Wymann, and Glen P. Perram, "Phenomenological Fireball Model for Remote Identification of High-Explosives," SPIE Proceedings Defense and Security Symposium, 656613 (2007). [CMSR]

Michael Hawks and Glen P. Perram, "Passive Ranging of Boost Phase Missiles," SPIE Proceedings Defense & Security Symposium, Acquisition, Tracking, Pointing, and Laser Systems Technologies XXI, 65690G (2007). [CMSR]

TUTTLE, RONALD L.

K. Graham, R. Tuttle, and J. Jordan, “A Cognitive Analytical Approach: Identification of Problem Complexity, Indicators, and the Need for Signatures to Reveal Foreign Denial and Deception,” The 76th Proceedings of the Military Operations Research Society Symposium, 10-12 June 2008, United Coast Guard Academy, New London, CT, USA. [CMSR]

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

BOHN, MATTHEW J., Lt Col

Stoik, C. D., Bohn, M. J., and Blackshire, J. L., “Nondestructive Evaluation of Aircraft Composites Using Terahertz Time Domain Spectroscopy,” Review of Progress in Quantitative Nondestructive Evaluation, Vol. 28, July 20 – July 25, 2008, University of Illinois at Chicago (UIC)

5.3.7. SUBSTANTIAL CONSULTATIONS

Note: Research Center affiliations are listed in [] if applicable.

CUSUMANO, SALVATORE J.

Cusumano, Salvatore, J., Consulted with the United States Air Force Academy on the procurement of their 2m class telescope.

FIORINO, STEVEN T., Lt Col

Fiorino, Steven T., “Aerostat Relay Mirror Ship-Based Laser Capability Enhancement using HELEEOS” to Dr. Kenneth Billman, Lockheed Martin Senior Fellow and Chief Scientist, LMSSC ABL Program, Lockheed Martin Space Systems, Sunnyvale, CA, Jul-Nov 2008.

Fiorino, Steven T., “Integrated Atmospheric Characterization System LIDAR” to Dr. David Roberts, Senior Research Scientist, Georgia Tech Research Institute, Electro-Optical Systems Laboratory, LIDAR Remote Sensing Branch, Atlanta, GA, July 2008.

Fiorino, Steven T., “Cloud Free Line of Sight Analysis and other Atmospheric Effects for UAVs” to Dr Kevin Keefer, Aeronautical Systems Center, (658 AESS), WPAFB, OH, Jan-Jul 2008.

MATHEWS, KIRK A.

Analysis and modeling of nuclear event radiation, including source, transport, detection and data analysis of radiations that include the full spectrum of electromagnetic and nuclear radiation, with Air Force Technical Applications Command, AFTAC/TH, Patrick AFB, FL.

Analysis and modeling of nuclear fuels and fuel cycle processes, with Air Force Technical Applications Command, AFTAC/TM, Patrick AFB, FL.

PETROSKY, JAMES C.

Chair, QASPR review Committee, NNSA: Lead role in an 8 professional (PhD) member review committee at the request of the National Nuclear Security Agency (NNSA.) Our primary function is to analyze the technical aspects of an engineering project at Sandia National Laboratories to establish a process for nuclear weapon validation without the Sandia Pulsed Reactor (SPR.)

Member HEMP Review Committee, DTRA: Serve as nuclear weapons technical expert to a panel chartered to review testing methodology and computational codes used to determine high altitude electromagnetic pulse (HEMP) vulnerability, reports to DTRA/RD enterprise.

5.3.8. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

Note: Research Center affiliations are listed in [] if applicable.

BAILEY, WILLIAM F.

Marciniak, M.A., S.J. Cusumano, S.T. Fiorino, G.P. Perram, W.F. Bailey and J.E. McCrae, "AFIT research in the areas of optical-reflectance, remote-sensing and absolute-radiometric measurements and models," presented at the Air Force Research Laboratory/Directed Energy Scatterometry Workshop held on 17-18 October 2007 at Kirtland AFB NM.

Skip Williams, Ryan Givens, Chad Lindstrom, Doug Davis, Chung Tam Tam, and William Bailey, "*Diode Laser Absorption Tomography of Two Dimensional Supersonic Flow*", 46th AIAA Aerospace Sciences Meeting, 7-10 January 2008, Las Vegas, NV.

E. Josyula, W. F. Bailey, S. F. Gimelshein, R. R. Arslanbekov, and V. I. Kolobov, "*Recent Advances in Modeling Thermal and Chemical Nonequilibrium in Continuum-Rarefied Gas Flows*," 26th International Rarefied Gas Dynamics Conference, July 21-26, 2008, Kyoto, Japan.

BOHN, MATTHEW J., Lt Col

David R. Armbruster and Matthew J. Bohn, "*Production and Characterization of Femtosecond-Laser-Induced Air Plasma*," Frontiers in Optics 2008, Rochester, NY.

Christopher D. Stoik, Matthew J. Bohn, and James L. Blackshire, "*Nondestructive Evaluation of Aircraft Composites Using Terahertz Time Domain Spectroscopy*," IRMMW-THz 2008 Terahertz for Life September 15 – 19, 2008, California Institute of Technology, Pasadena, California.

Matthew J. Bohn, "*Alternative Explanation of Free-Induction Decay*," IRMMW-THz 2008 Terahertz for Life September 15–19, 2008, California Institute of Technology. Pasadena. California.

BRIDGMAN, CHARLES J.

Bridgman, C. Panel member of the Nuclear Forensics Advisory Panel jointly hosted by The Department of Homeland Security, Domestic Nuclear Detection Office and the Defense Threat Reduction Agency (DoD) - met monthly at DHS, Washington D.C.

BUNKER, DAVID J.

Randall, R.M., Fiorino, S.T., S.J. Cusumano and D. Bunker, "High Energy Laser Performance Assessments from Remotely-Sensed Measurements of Atmospheric Beam Scatter," National Consortium of MASINT Research Technology Review, Sante Fe, NM, March 2008.

Kevin C. Gross, Glen P. Perram, Ronald F. Tuttle, David J. Bunker, "*Using fireball phenomenology to assess the applicability of current and future BATTLESPACE sensors to the C-IED fight*", JIEDDO IPT Meeting, Scitor, Chantilly, VA, 25–26 March 2008. [CMSR]

BURGRAFF, LARRY W.

Burgraff, Larry W., Presented research results, evaluated ARRS contractor performance and recommended directions for future research at AFMC 709 ARSS, Air Force Nuclear Weapons and Counterproliferation Agency Program Meeting on Bacterial Spore Thermal Neutralization 11-12 March 2008 at the Nuclear Weapons Center (NWC), Kirtland Air Force Base, NM.

CUSUMANO, SALVATORE, J.

Instructor: Beam Control Short Course, 2008 Directed Energy Systems Symposium, Monterey, CA 3 March 2008. 17 Students.

Randall, R.M., Fiorino, S.T., S.J. Cusumano and D. Bunker, "High Energy Laser Performance Assessments from Remotely-Sensed Measurements of Atmospheric Beam Scatter," National Consortium of MASINT Research Technology Review, Sante Fe, NM, March 2008.

Marciniak, M.A., S.J. Cusumano, S.T. Fiorino, G.P. Perram, W.F. Bailey and J.E. McCrae, "AFIT research in the areas of optical-reflectance, remote-sensing and absolute-radiometric measurements and models," presented at the Air Force Research Laboratory/Directed Energy Scatterometry Workshop held on 17-18 October 2007 at Kirtland AFB NM.

Fiorino, S.T., Bartell, R.J. Krizo, M.J., Moore, K.P. and Cusumano, S.J. "*Comparison of a Worldwide, Hyperspectral Atmospheric Characterization Package to Measurements and MODTRAN*," 30th Review of Atmospheric Transmission Models Meeting, Lexington, MA, 10-12 June 2008. [CDE]

Bartell, R.J., Fiorino, S.T. Krizo, M.J. and Cusumano, S.J. "*Comparison of HEL Effective Range and Target Tracking Range as a Function of Aperture Diameter Over Diverse Low Altitude Scenarios*," DEPS 6th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2008. [CDE]

FIORINO, STEVEN T., Lt Col

Instructor: Atmospheric Effects (LEEDR) Short Course, 2008 Directed Energy Systems Symposium, Monterey, CA 3 March 2008. 17 Students.

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Marciniak, M.A., S.J. Cusumano, S.T. Fiorino, G.P. Perram, W.F. Bailey and J.E. McCrae, "*AFIT research in the areas of optical-reflectance, remote-sensing and absolute-radiometric measurements and models*", presented at the Air Force Research Laboratory/Directed Energy Scatterometry Workshop held on 17-18 October 2007 at Kirtland AFB NM.

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President, Wright Memorial Chapter of the American Meteorological Society.

GROSS, KEVIN C.

Gross, K., "*Phenomenological Model for Infrared Emissions from High-Explosive Detonation Fireballs*", Ph.D. dissertation, Air Force Institute of Technology, Wright-Patterson AFB, Ohio (2007).

Gross, Kevin C. and Perram, Glen P. "*Mid Infrared Imaging FTIR for Battlespace Combustion Events*", Telops Scientific Workshop 2008, Washington, DC, 25-26 September 2008. [CMSR]

Bradley Kenneth, Gross, Kevin and Perram, Glen “*Imaging Fourier Transform Spectrometry (IFTS) of Combustion Events with the Telops FIRST-MW*”, 2008 International Symposium on Spectral Research Meeting, Hoboken, NJ, June 23-27, 2008. [CMSR]

Steward, B. J. Sinha, N. DeMagistris, M. Gross, K. C., and Perram, G. P. “*Iron Rose 2 Ground Truth and Modeling Review*”, 55th Joint Army-Navy-NASA-Air Force (JANNAF) Propulsion Meeting, Boston, MA 12-16 May 2008. [CMSR]

Gross, Kevin C. Perram, Glen P. Tuttle, Ronald F. Bunker, David J. “*Using fireball phenomenology to assess the applicability of current and future BATTLESPACE sensors to the C-IED fight*”, JIEDDO IPT Meeting, Scitor, Chantilly, VA, 25–26 March 2008. [CMSR]

HENGHELD, ROBERT L.

Member, BRAC Physical Sciences Working Group.

Honors and Awards Chair, Ohio-Region Section, American Physical Society.

Moore, E. A., Y. K. Yeo, R. L. Hengehold, and Mee-Yi Ryu, “*Electrical Activation Studies of Si-Implanted $Al_{0.4}Ga_{0.6}N$ and $Al_{0.5}Ga_{0.5}N$ Implanted with Si for N-type Doping*,” the March 2008 Meeting of the American Physical Society, New Orleans, Louisiana, 10-14 March 2008.

MARCINIAK, MICHAEL A.

Cole, W.P., M.A. Marciniak and M.B. Haeri, “*Modification of the laser range equation*,” Proceedings of the 2008 Meeting of the Military Sensing Symposium Specialty Group on Passive Sensors, Battlefield Survivability & Discrimination, Detectors, and Materials (2008).

Cole, W.P., M.A. Marciniak, S.C. Cain, J.E. McCrae and M.B. Haeri, “*Laser illumination of optical devices*,” Proceedings of the 2008 Meeting of the Military Sensing Symposium Specialty Group on Electro-Optical & Infrared Countermeasures (2008).

Marciniak, M.A., S.J. Cusumano, S.T. Fiorino, G.P. Perram, W.F. Bailey and J.E. McCrae, “*AFIT research in the areas of optical-reflectance, remote-sensing and absolute-radiometric measurements and models*,” presented at the 2007 Air Force Research Laboratory/Directed Energy Scatterometry Workshop held on 17-18 October 2007 at Kirtland AFB NM.

Marciniak, M.A., “*AFIT research in support of Air Force Research Laboratory/Materials and Manufacturing Directorate laser-hardened materials*,” presented at the Tri-Service Information Exchange Meeting (6.1 and 6.2 Agile Hardening Concepts) held on 14-16 April 2008 on Hilton Head Island, SC.

MATHEWS, KIRK A.

Member: Satellite Sensor Review Panel, Air Force Technical Applications Center.

Founding Member: NPP Senior Advisory Panel, Air Force Technical Applications Center.

MCCLORY, JOHN W., LTC

McClory, J., The Effect of Irradiation on the Electrical properties of Aluminum Gallium Nitride/Gallium Nitride Hetrostructures, PhD dissertation, Air Force Institute of Technology, Wright-Patterson Air Force Base, Ohio (2008).

MCCRAE, JACK E., Col

Cole, W.P., M.A. Marciniak, S.C. Cain, J.E. McCrae and M.B. Haeri, “*Laser illumination of optical devices*,” Proceedings of the 2008 Meeting of the Military Sensing Symposium Specialty Group on Electro-Optical & Infrared Countermeasures (2008).

Marciniak, M.A., S.J. Cusumano, S.T. Fiorino, G.P. Perram, W.F. Bailey and J.E. McCrae, "AFIT research in the areas of optical-reflectance, remote-sensing and absolute-radiometric measurements and models," presented at the 2007 Air Force Research Laboratory/Directed Energy Scatterometry Workshop held on 17-18 October 2007 at Kirtland AFB NM.

PERRAM, GLEN P.

Marciniak, M.A., S.J. Cusumano, S.T. Fiorino, G.P. Perram, W.F. Bailey and J.E. McCrae, "AFIT research in the areas of optical-reflectance, remote-sensing and absolute-radiometric measurements and models," presented at the 2007 Air Force Research Laboratory/Directed Energy Scatterometry Workshop held on 17-18 October 2007 at Kirtland AFB NM.

Perram, Glen P. and Pitz, Greg A., "Lineshape Kinetics of Diode Pumped Alkali Lasers," Tenth Annual Directed Energy Symposium, 5-8 November 2007, Huntsville, Alabama.

Smith, Bill, Sr., Kireev, Stanislav, West, Leanne, Gimmestad, Gary, Cornman, Larry, Feltz, Wayne, Perram, Glen, and Daniels, Taumi, "Interferometric radiometer for in-flight detection of aviation hazards", SPIE Conference on Optical Engineering and Applications, 10-14 August 2008, San Diego, CA.

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Steward, B. J. Sinha, N. DeMagistris, M. Gross, K. C., and Perram, G. P. "Iron Rose 2 Ground Truth and Modeling Review" 55th Joint Army-Navy-NASA-Air Force (JANNAF) Propulsion Meeting, Boston, MA 12-16 May 2008. [CMSR]

Hager, G. McIver, J. Hostutler, D. Pitz, G. and Perram, G., "A Quasi-Two Level Analytic Model For End Pumped Alkali Metal Vapor Lasers" SPIE High Energy Laser Ablation Conference, Taos, NM. 21 -24 April 2008.

Pitz, Greg A. and Perram, Glen P., "Pressure Broadening of the D1 and D2 lines in Diode Pumped Alkali Lasers" SPIE High Energy Laser Ablation Conference, Taos, NM. 21 -24 April 2008.

Gross, Kevin C. Perram, Glen P. Tuttle, Ronald F. Bunker, David J., "Using fireball phenomenology to assess the applicability of current and future BATTLESPACE sensors to the C-IED fight" JIEDDO IPT Meeting, Scitor, Chantilly, VA, 25-26 March 2008. [CMSR]

RANDALL, ROBB R., Maj

Randall, R.M., Fiorino, S.T., S.J. Cusumano and D. Bunker, "High Energy Laser Performance Assessments from Remotely-Sensed Measurements of Atmospheric Beam Scatter," National Consortium of MASINT Research Technology Review, Sante Fe, NM, March 2008.

Randall, R. M., "Satellite Calibration Corrections and Implications for Space Surveillance and Climate Change," American Meteorological Society, Wright Memorial Chapter Meeting, 10 January 2008.

RUSSELL, TIMOTHY H., Maj

Massey, S. M., Spring, J. B., and Russell, T. H., "Continuous wave stimulated Brillouin scattering phase conjugation in step index optical fibers," Solid State and Diode Laser Technology Review, Albuquerque, NM, 2-5 June 2008. [CDE]

TUTTLE, RONALD L.

Gross, Kevin C. Perram, Glen P. Tuttle, Ronald F. Bunker, David J. “*Using fireball phenomenology to assess the applicability of current and future BATTLESPACE sensors to the C-IED fight*”, JIEDDO IPT Meeting, Scitor, Chantilly, VA, 25–26 March 2008. [CMSR]

WEEKS, DAVID E.

D. E. Weeks, “*A Wigner Distribution Analysis of Scattering Dynamics*”, AFOSR Molecular Dynamics/Theoretical Chemistry Contractor's Meeting, Vienna, VA, 19-21 May 2008.

M. B. Garvin and D. E. Weeks, “*The Adiabatic-to-Diabatic Mixing Angle for the Inelastic Collision $B(^2P_{1/2}) + H_2(n, j) \rightarrow B(^2P_{3/2}) + H_2(n', j')$* ”, APS March Meeting, New Orleans, LA, March 10-14, 2008.

Served as the Ohio Section of the American Physical Society Chair Elect 2008-2009.

YEO, YUNG KEE

Moore, E. A., Y. K. Yeo, R. L. Hengehold, and Mee-Yi Ryu, “*Electrical Activation Studies of Si-Implanted $Al_{0.4}Ga_{0.6}N$ and $Al_{0.5}Ga_{0.5}N$ Implanted with Si for N-type Doping*,” the March 2008 Meeting of the American Physical Society, New Orleans, Louisiana, 10-14 March 2008.

5.4. DEPARTMENT OF MATHEMATICS AND STATISTICS

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5.4.1 <u>MASTER'S THESES</u>	106
5.4.2 <u>FUNDED RESEARCH PROJECTS</u>	106
5.4.3 <u>REFEREED JOURNAL PUBLICATIONS</u>	107
5.4.4 <u>REFEREED CONFERENCE PUBLICATIONS</u>	107
5.4.5 <u>SUBSTANTIAL CONSULTATIONS</u>	108
5.4.6 <u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u>	108

5.4.1. MASTER'S THESES

5.4.1.1. APPLIED MATHEMATICS (GAM)

HOCKERSMITH, BRIAN D., *Statistical Removal of Shadow for Applications to Gait Recognition*.

AFIT/GAM/ENC/08-04. Faculty Advisor: Maj Samuel A. Wright. Sponsor: N/A.

MASSAR, MELODY L., *Time-Frequency Analysis of Terahertz Radar Signals for Rapid Heart and Breath Rate Detection*. AFIT/GAM/ENC/08-05. Faculty Advisor: Dr. Matthew C. Fickus. Sponsor: N/A.

PETERSON, JESSE D., *Entire Blow-Up Solutions of Semilinear Elliptic Equations and Systems*.

AFIT/GAM/ENC/08-02. Faculty Advisor: Dr. Aihua W. Wood. Sponsor: N/A.

SLATTERY, MELANIE R., *Estimation of the Number of Microbial Species Comprising a Population*.

AFIT/GAM/ENC/08-03. Faculty Advisor: Maj Samuel A. Wright. Sponsor: N/A.

WAGENMAN, SETH B., *Risk-Based Comparison of Classification Systems*. AFIT/GAM/ENC/08-01. Faculty Advisor: Maj Steven N. Thorsen. Sponsor: N/A.

WALSH, MICHAEL B., *ROC Curves of Fused Independent Classification Systems*. AFIT/GAM/ENC/08-06.

Faculty Advisor: Dr. Mark E. Oxley. Sponsor: N/A.

5.4.1.2. OPERATIONS RESEARCH (GOR)

BETHEA, DAVID M., *Improving Mixed Variable Optimization of Computational and Model Parameters Using Multiple Surrogate Functions*. AFIT/GOR/ENC/08-01. Faculty Advisor: Lt Col Mark A. Abramson. Sponsor:

Los Alamos National Laboratory.

CHELLIAH, DERRICK M., *Statistical Approach to the Characterization and Recognition of Human Gaits*.

AFIT/GOR/ENC/08-02. Faculty Advisor: Maj Samuel A. Wright. Sponsor: N/A.

5.4.1.3. RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)

RUSNOCK, CHRISTINA F., *Predicting Cost and Schedule Growth for Military and Civil Space Systems*.

AFIT/GRD/ENC/08M-01. Faculty Advisor: Dr. Edward D. White, III. Sponsor: AFSPC.

5.4.2. FUNDED RESEARCH PROJECTS

Note: Research Center affiliations are listed in [] if applicable.

ABRAMSON, MARK A., Lt Col

“Algorithms for Blackbox Optimization Using Surrogate Functions.” Sponsor: AFOSR. Funding: \$11,626.

BULUTOGLU, DURSUN A.

“Algorithmic Tools for Finding Efficient Designs and Test Suites for Test and Evaluation.” Sponsor: AFOSR. Funding: \$44,974.

FICKUS, MATTHEW C.

“Time-Frequency Analysis of Doppler-Shifted Signals.” Sponsor: AFOSR. Funding: \$27,677.

OXLEY, MARK E.

“Qualia Exploitation of Sensor Technology (QUEST) for Structural Health Management.” Sponsor: AFRL/RB.
Funding: \$8,000. [COA]

5.4.3. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [] if applicable.

ABRAMSON, MARK A., Lt Col

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KAZISKA, DAVID M., Maj

Kaziska, D., and A. Srivastava, Gait-based human recognition by classification of cyclostationary processes on nonlinear shape manifolds, *Journal of the American Statistical Association* **102**, No. 480 (2007), 1114-1124.

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Note: Research Center affiliations are listed in [] if applicable.

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FICKUS, MATTHEW C.

Fickus, M., G. S. Seetharaman and M. E. Oxley, “Multiscale Moment Transforms Over the Integer Lattice”, *Proceedings of SPIE, Wavelets XII*, Editors: D. Van De Ville, V.K. Goyal and M. Papadakis, Vol. 6701 (2007), pp. 67011N/1-8.

Srinivasa, G., M. Fickus and J. Kovacevic, "Active Contour-based Multiresolution Transforms for the Segmentation of Fluorescence Microscope Images", *Proceedings of SPIE, Wavelets XII*, Editors: D. Van De Ville, V.K. Goyal and M. Papadakis, Vol. 6701 (2007), pp. 67010I/1-15.

THORSEN, STEVEN N., Maj

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OXLEY, MARK E.

Rogers, S. K., C. Sadowski, K. W. Bauer, Jr., M. E. Oxley, M. Kabrisky, A. Rogers, S. D. Mott, "The life and death of ATR/Sensor Fusion and the hope for resurrection," *Proceedings of SPIE, Automatic Target Recognition XVIII* **6967** (2008), paper 1. Editors: F. A. Sadjadi and A. Mahalanobis. (invited paper)

Lacey, T. H., R.F. Mills, R. A. Raines, M. E. Oxley, K.W. Bauer, Jr., S. K. Rogers, "A qualia representation of cyberspace," *Proceedings of SPIE, Evolutionary and Bio-Inspired Computation: Theory and Applications II* **6964** (2008), paper 11. Editors: M. Blowers and A. F. Sisti. (on compact disc)

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BUSH, BRETT A., Maj

Bush, B. A., "Simulating the performance of the T-11 parachute off the C-17," for C-17 SPO (836 AESG), Wright-Patterson AFB, OH, Oct 2007-Sep 2008.

DUCKRO, DONALD E., Lt Col

Duckro, D. E. and J. S. Turner, "Fly what you want, log what you need: a new currency system for USAF mobility aircrew", for AF/A3O-A, Pentagon, Washington DC, October 2007 - June 2008.

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5.4.6. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

ABRAMSON, MARK A., Lt Col

Editorial board, *Optimization and Engineering*

Reviewer, *SIAM Journal on Optimization*, *Optimization and Engineering*, *Optimization Methods and Software*, *Journal of Global Optimization*, *ASME Journal of Mechanical Design*, *Journal of Computational and Applied Mathematics*, and *Optimization Letters*.

Bethea, D. M., M. A. Abramson, T. J. Asaki, J.E. Dennis, Jr., and M. Sottile, "Optimization of model and computational parameters in expensive engineering simulations," *SIAM Conference on Optimization*, Boston, MA, May, 2008.

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Abramson, M. A., "Mesh adaptive direct search algorithms for mixed variable, constrained, black box optimization," Air Force Research Laboratory, Sensors Directorate, Wright-Patterson AFB, OH, March, 2008.

- Abramson, M. A., "Mesh adaptive direct search algorithms for constrained mixed variable optimization," MITRE Corporation, Bedford, MA, February, 2008.
- Abramson, M. A., "Mesh adaptive direct search algorithms for constrained mixed variable optimization," Oak Ridge National Laboratory, Oak Ridge, TN, February, 2008.
- Abramson, M. A., "Mesh adaptive direct search algorithms for constrained mixed variable optimization," Department of Mathematics, University of Tennessee, Knoxville, TN, February, 2008.
- Abramson, M. A., "Mesh adaptive direct search algorithms for mixed variable constrained optimization," Department of Mathematics, Missouri University of Science and Technology, Rolla, MO, February, 2008.
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BAKER, WILLIAM P.

- Larson, R., A. Palazotto, and W. Baker, "Analysis of wave propagation in monolithic and functionally graded Ti-TiB plates subject to impact loading", *AIAA SDM Conference*, Schaumburg, IL, April, 2008.

BULUTOGLU, DURSUN A.

- Reviewer, *Journal of Statistical Planning and Inference*, *Biometrika*, *Utilitas Mathematica*, *Statistical Methodology*, *Communications in Statistics*, and *Journal of Computational Statistics and Data Analysis*.
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- Bulutoglu, D. "Classification of Orthogonal Arrays by Integer Programming," AFOSR Program Review, Washington D.C., April 2008.
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DEA, JOHN R., Maj

Dea, J. R., "Non-Reflecting Boundary Conditions for Flow in a Channel," Seminar in honor of Matsuto Kawahara (Chuo University, Japan), Naval Postgraduate School, Monterey, CA, February 2008.

FICKUS, MATTHEW C.

Reviewer, *Applied and Computational Harmonic Analysis*, *Advances in Computational Mathematics*, and *Serdica Mathematical Journal*.

Fickus, M., "A frame-theoretic analysis of continuous wave radar," American Mathematical Society Spring Southeastern Meeting, Louisiana State University, Baton Rouge, LA, March, 2008.

LAIR, ALAN V.

Reviewer, *Mathematical Reviews*.

Lair, A. V., "Large solutions of mixed sublinear/superlinear elliptic equations," 7th AIMS International Conference on Dynamical Systems, Differential Equations and Applications, Arlington, TX, May, 2008.

OXLEY, MARK E.

Referee, *Applicable Analysis* and *Journal of Optical Society of America B, Sensors*.

Reviewer, *11th International Conference on Information Fusion* (FUSION 2008), April 2008.

Reviewer, U.S. Department of Energy, National Nuclear Security Administration, Office of Defense Nuclear Nonproliferation (NA-20), Office of Nonproliferation Research and Development (NA-22), February 2008.

Member, Conference Program Committee, SPIE's Defense & Security Symposium, *Intelligent Computing: Theory and Applications VI*, Orlando FL, March 2008.

Best Paper Award Committee, *11th International Conference on Information Fusion* (FUSION 2008), June 2008.

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THORSEN, STEVEN N., Lt Col

Reviewer, *11th International Conference on Information Fusion* (FUSION 2008), April 2008.

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WOOD, AIHUA W.

Wood, A. W., "Topics on mathematical methods in EM scattering phenomena." Applied Mathematics Seminar, Tulane University, New Orleans, LA, Nov, 2007.

Wood, A. W., "EM scattering by a protruding cavity in an impedance plane." ACES Annual Conference, Niagara Falls, ON, Canada, Mar, 2008.

5.5. DEPARTMENT OF OPERATIONAL SCIENCES

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5.5.1	<u>DOCTORAL DISSERTATIONS</u>	112
5.5.2	<u>MASTER'S THESES</u>	112
5.5.3	<u>GRADUATE RESEARCH PAPERS</u>	114
5.5.4	<u>FUNDED RESEARCH PROJECTS</u>	115
5.5.5	<u>REFEREED JOURNAL PUBLICATIONS</u>	116
5.5.6	<u>REFEREED CONFERENCE PUBLICATIONS</u>	118
5.5.7	<u>SUBSTANTIAL CONSULTATIONS</u>	121
5.5.8	<u>BOOKS & CHAPTERS IN BOOKS</u>	121
5.5.9	<u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u>	122

5.5.1. DOCTORAL DISSERTATIONS

ARTELLI, MICHAEL J., *Modeling and Analysis of Resolve and Morale for the "Long War"*. AFIT/DS/ENS/07-02. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: US CENTCOM.

FRIEND, MARK A., *Combat Identification with Synthetic Aperture Radar, Out-Of-Library Identification and Non-Declarations*. AFIT/DS/ENS/07-04. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: AFOSR and ACC.

LEAP, NATHAN J., *A Confidence Paradigm for Classification Systems*. AFIT/DS/ENS/08-02. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: AFOSR.

LONG, SCOTT N., *Characterizing Effects and Benefits of Beam Defocus on High Energy Laser Performance Under Thermal Blooming and Turbulence Conditions for Air-to-Ground Engagements*. AFIT/DS/ENS/08-05. Faculty Advisor: Dr. John O. Miller. Sponsor: HEL-JTO.

RODRIGUEZ, JUNE F.D., *Metamodeling Techniques to Aid in the Aggregation Process of Large Hierarchical Simulation Models*. AFIT/DS/ENS/08-03. Faculty Advisor: Dr. John O. Miller. Sponsor: HQ USAF.

5.5.2. MASTER'S THESES

5.5.2.1. LOGISTICS MANAGEMENT (GLM)

DURAND, JEFFREY M., *Aircraft Maintenance Organizational Structure Changes: An Antecedent Model*. AFIT/GLM/ENS/08-1. Faculty Advisor: Dr. Jeffrey A. Odgen. Sponsor: Logistics Transformation Office.

GARDNER, CHRISTOPHER P., *Balancing Government Risks with Contractor Incentives in Performance-Based Logistics Contracts*. AFIT/GLM/ENS/08-2. Faculty Advisor: Dr. Jeffrey A. Odgen. Sponsor: Defense Acquisition University.

HEPLER, AARON J., *Balanced Scorecard: Evaluation of Air Force Material Command's Implementation and Use*. AFIT/GLM/ENS/08-03. Faculty Advisor: Lt Col Bradley E. Anderson. Sponsor: 554 ELSG/SBI.

KENDALL, KELLY D., *AFMC Customer Satisfaction Study at the Air Logistics Centers*. AFIT/GLM/ENS/08-5. Faculty Advisor: Dr. William A. Cunningham. Sponsor: AFMC/A4SP.

KIM, SE YOUNG, *A Case Analysis of Explaining the Main Factors that Contribute to ROK'S Decision Making in Procurement of Defense Articles*. AFIT/GLM/ENS/08-14. Faculty Advisor: Lt Col Stanley E. Griffis. Sponsor: SAF/IA.

LARSON, PHILLIP K., *Forecasting Expeditionary Training for Company Grade Logistics Readiness Officers: A Delphi Study*. AFIT/GLM/ENS/08-8. Faculty Advisor: Dr. William A. Cunningham. Sponsor: AETC/A4R.

MAIN, BRYAN D., *Analytical Techniques and the Air Force Logistics Readiness Officer*. AFIT/GLM/ENS/08-9. Faculty Advisor: Dr. William A. Cunningham. Sponsor: AF/A4I.

MILLER, TROY J., *It is Time the United States Air Force Changes the Way it Feeds its Airmen. Six University's Perspectives on Outsourcing*. AFIT/GLM/ENS/08-10. Faculty Advisor: Lt Col Bradley E. Anderson. Sponsor: Air Force Services Agency, T2.

SERVIDIO, JOSEPH A., *Process Time Refinement for Reusable Launch Vehicle Regeneration Modeling*. AFIT/GLM/ENS/08-11. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: AFRL/RB.

STRACHAN, ELISE V., *Governance Structure Transformation During ERP Implementations*. AFIT/GLM/ENS/08-12. Faculty Advisor: Dr. Jeffrey A. Odgen. Sponsor: Logistics Transformation Office.

VANN, LANCE A., *Feasibility of JP-8 to Jet A Fuel Conversion at U. S. Military Facilities*. AFIT/GLM/ENS/08-13. Faculty Advisor: Lt Col Bradley E. Anderson. Sponsor: AFPET/AFF.

WILLIAMSON, DEREK L., *Inland Resupply Without a Road or Runway: Airdrop Solutions Including High-Altitude Precision Systems*. AFIT/GLM/ENS/08-15. Faculty Advisor: Maj Shane N. Hall. Sponsor: AFOSR/NM and AF/A8XC.

5.5.2.2. OPERATIONS RESEARCH (GOR)

ALKANAT, OMER, *Determining the Surface-to-Air Missile Requirement for Western and Southern Part of the Turkish Air Defense System*. AFIT/GOR/ENS/08-01. Faculty Advisor: Dr. James T. Moore. Sponsor: Turkish Air Force.

BURNWORTH, TODD C., *Simulated Multi-Echelon Readiness-Based Inventory Leveling With Lateral Resupply*. AFIT/GOR/ENS/08M-23. Faculty Advisor: Dr. John O. Miller. Sponsor: AFMC/A9A.

CANDIR, AHMET AYDIN, *Discrete Event Simulation of a Suppression of Enemy Air Defenses (SEAD) Mission*. AFIT/GOR/ENS/08-03. Faculty Advisor: Dr. John O. Miller. Sponsor: Turkish Air Force.

EVANS, EMILY C., *A Simulation Optimization Approach to the Design of Unmanned Aircraft Systems*. AFIT/GOR/ENS/08-22. Faculty Advisor: Maj Shane N. Hall. Sponsor: AFRL/RD.

GOKCEN, OSMAN BAHADIR, *Robust Aircraft Squadron Scheduling in the Face of Absenteeism*. AFIT/GOR/ENS/08-06. Faculty Advisor: Maj Shane J. Knighton. Sponsor: Turkish Air Force.

JOHNSON, ROBERT J., *Improved Feature Extraction, Feature Selection, and Identification Techniques that Create a Fast Unsupervised Hyperspectral Target Detection Algorithm*. AFIT/GOR/ENS/08-07. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: N/A.

KANG, YOUN IN, *Combat Identification Using Multiple TUAV Swarm*. AFIT/GOR/ENS/08-09. Faculty Advisor: Dr. John O. Miller. Sponsor: N/A.

KAPPEDAL, RYAN D., *Intelligence Surveillance and Reconnaissance Asset Assignment for Optimal Mission Effectiveness*. AFIT/GOR/ENC/08-10. Faculty Advisor: Maj August G. Roesener. Sponsor: USSTRATCOM.

KIM, TAE HO, *Combat Identification Modeling Using Robust Optimization Techniques*. AFIT/GOR/ENS/08-11. Faculty Advisor: Dr. Kenneth W. Bauer, Jr. Sponsor: ACC/A8SI.

LOEFFELHOLZ, BERNARD J., *Street Gangs: A Modeling Approach to Evaluation of "At Risk" Youth*. AFIT/GOR/ENS/08-24. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: Montgomery County (OH) Police Department.

LUPA, JOSEPH S., *Simulation of National Intelligence Process with Fusion*. AFIT/GOR/ENS/08-13. Faculty Advisor: Dr. John O. Miller. Sponsor: NSSO.

MARKS, HUNTER A., *Robust Sensitivity Analysis of Courses of Action Using an Additive Value Model*. AFIT/GOR/ENS/08-14. Faculty Advisor: Maj Shane J. Knighton. Sponsor: AFRL/RISE.

OKAL, ADEM, *Simulation Modeling and Analysis of F-16 Pilot Training Squadron*. AFIT/GOR/ENS/08-15. Faculty Advisor: Dr. John O. Miller. Sponsor: Turkish Air Force.

PACIENCIA, TODD J., *Multi-Objective Optimization of Mixed-Variable, Stochastic Systems Using Single-Objective Formulations*. AFIT/GOR/ENS/08-17. Faculty Advisor: Dr. James W. Chrissis. Sponsor: AFRL/RB.

PONACK, RYAN S., *Assessing Capabilities of the High Energy Liquid Laser Area Defense System Through Combat Simulations*. AFIT/GOR/ENS/08-18. Faculty Advisor: Dr. John O. Miller. Sponsor: AF/A9.

STONE, BRIAN B., *Developing an Excel Decision Support System Using In-Transit Visibility to Decrease DoD Transportation Delays*. AFIT/GOR/ENS/08-20. Faculty Advisor: Dr. James T. Moore. Sponsor: AMC/A9.

TANNEHILL, BRYAN R., *Forecasting Instability Indicators in the Horn of Africa Region*. AFIT/GOR/ENS/08-21. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: USCENTCOM J8-ARB.

5.5.2.3. ENGINEERING MANAGEMENT (GEM)

CULLEN, ANDREW J., *A Multi-Objective Linear Program Model to Test Hub-and-Spoke Networks as a Potential Air Force Deployment Alternative*. AFIT/GEM/ENS/08-M01. Faculty Advisor: Dr. James T. Moore. Sponsor: AFOSR/NM or AF/A7.

5.5.3. GRADUATE RESEARCH PAPERS

5.5.3.1. GRADUATE LOGISTICS MANAGEMENT (ILM)

GRANT, SCOTT D., *Improving the Tanker Employment Model*. AFIT/ILM/ENS/08-02. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.

HACKLER, GEORGE C., *Goal Programming Tanker Beddown Decisions*. AFIT/ILM/ENS/08-03. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: N/A.

KIMBROUGH, JAMES M., *Examining US Irregular Warfare Doctrine*. AFIT/ILM/ENS/08-04. Faculty Advisor: Dr. Richard F. Deckro. Sponsor: N/A.

KOVICH, MATTHEW D., *Developing a Predictive Model for Unscheduled Maintenance Requirements on United States Air Force Installations*. AFIT/ILM/ENS/08-05. Faculty Advisor: Lt Col Stanley E. Griffis. Sponsor: HQ AFMC/A7.

MARENTETTE, KENNETH A., *An Objective Decision Tool for Use in Considering Air Force Specialty Code Pairs for Consolidation*. AFIT/ILM/ENS/08-06. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: HAF/A1PF.

NORTON, JOHN D., *Developing a Predictive Model for Unscheduled Maintenance Requirements on United States Air Force Installations*. AFIT/ILM/ENS/08-05. Faculty Advisor: Lt Col Stanley E. Griffis. Sponsor: HQ AFMC/A7.

PETTUS, EVAN L. and RICHARD V. STEELE, *Air Dominance in an Anti-Access Environment*. AFIT/ILM/ENS/08-08. Faculty Advisor: Lt Col Bradley E. Anderson. Sponsor: DoD Policy Planning.

STEELE, RICHARD V., See Pettus, Evan L.

5.5.3.2. GRADUATE MOBILITY OPERATIONS (IMO)

BUFORD, TRAVIS P., *Contingency Response Groups: How Many Do We Really Need?* AFIT/IMO/ENS/08-01. Faculty Advisor: Dr. James T. Moore. Sponsor: 621 COSG/CD.

CLARK, WILL, *Optimal Cargo Compartment Size for the Advanced Joint Combat System*. AFIT/IMO/ENS/08-02. Faculty Advisor: Lt Col Pamela S. Donovan. Sponsor: AMC/A8X.

DEVOE, DANIEL A., *When Precision Becomes Precise: What it Takes to Achieve 10 Meter Accuracy with the Joint Precision Airdrop System*. AFIT/IMO/ENS/08-03. Faculty Advisor: Dr. James T. Moore. Sponsor: SAF/AQQ.

DEVOS, BROCK E., *Airfield Operations and Airbase Opening*. AFIT/IMO/ENS/08-04. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: AMC/A3.

DUDLEY, PAUL J., *Is the Euro-NATO Joint Jet Pilot Training Program Viable in the Post Cold War Era?* AFIT/IMO/ENS/08-05. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: AETC/A5.

EASTLAND, KEVIN M., *Has the Expeditionary Mobility Task Force (EMTF) Organization Outlived Its Usefulness?* AFIT/IMO/ENS/08-06. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: USAF EC/CC.

HALL, JAMES B., *Assessing the Productivity of the Air Force Flying Training Process: Proposing a New Measurement of Success*. AFIT/IMO/ENS/08-07. Faculty Advisor: Lt Col Donald E. Duckro. Sponsor: 18 AF/CV.

HANSON, JEREMY R., *Moving the Force: The Impact of Large Scale Brigade Combat Team Deployments*. AFIT/IMO/ENS/08-08. Faculty Advisor: Dr. James T. Moore. Sponsor: AMC/A3.

HOWLAND, ERIC J., *A Lean Look at the C-17 Home Station Departure Process*. AFIT/IMO/ENS/08-09. Faculty Advisor: Dr. Alan W. Johnson. Sponsor: 437 OG/CC.

KIELTY, ROBERT A., *A Multinational Perspective on Aircraft Spares Cross Servicing for the Mobility Air Forces*. AFIT/IMO/ENS/08-10. Faculty Advisor: Lt Col Stanley E. Griffis. Sponsor: AMC/A4.

LACY, JOHN A., *Application of AFSO21 Principles to Navigator Training at the C-130 Formal Training Unit*. AFIT/IMO/ENS/08-11. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: 314 OG/CC.

MITCHELL, LAWRENCE W.S., *Fee for Service Air Refueling: A Summary Market Analysis*. AFIT/IMO/ENS/08-12. Faculty Advisor: Dr. James T. Moore. Sponsor: AMC/CR.

NICHOL, JAMES P., *Analysis of AFRICOM Theater Airlift Distribution Network*. AFIT/IMO/ENS/08-13. Faculty Advisor: Dr. James T. Moore. Sponsor: AFRICOM/J3.

NULTON, JASON D., *Assessing Air Force Logistics Reengineering (LogR) Against Process in the Supply Chain*. AFIT/IMO/ENS/08-14. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: AMC/A4.

TURNER, JOBIE S., *Fly What You Want, Log What You Need: A New Currency System for USAF Mobility Aircrew*. AFIT/IMO/ENS/08-15. Faculty Advisor: Lt Col Donald E. Duckro. Sponsor: 18 AF/CV.

ZEINER, ZACHARY B., *Intra-Theater Airlift Cost Analysis*. AFIT/IMO/ENS/08-16. Faculty Advisor: Dr. James T. Moore. Sponsor: AF/A9.

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Note: Research Center affiliations are listed in [] if applicable.

BAUER, KENNETH W., Jr.

“Sensor Fusion for Automatic Target Recognition (Combat ID Research).” Sponsor: ACC. Funding: \$33,000. [COA]

CHAMBAL, STEPHEN P., Lt Col

“COA Support.” Sponsor: AFMC/A9. Funding: \$175,000. [COA]

DECKRO, RICHARD F.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$238,360.

“Operations Research in Support of NSA.” Sponsor: NSA. Funding: \$20,000.

HALL, SHANE N., Maj

“The Optimal Allocation and Utilization of Weather Assets for Strategic Weather.” Sponsor: AFSOC. Funding: \$12,000.

KNIGHTON, SHANE A., Maj

“Effects-Based Operations (EBO) Research Consortium.” Sponsor: AFRL/RI. Funding: \$15,000.

MILLER, JOHN O.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$346,910. [COA]

“Air Force Standard Analysis Toolkit (AFSAT) Support.” Sponsor: AF/A9. Funding: \$35,000. [COA]

MOORE, JAMES T.

“Application of Metaheuristics to Air Force Problems.” Sponsor: AFOSR. Funding: \$51,500. [COA]

OGDEN, JEFFREY A.

“ECSS Research.” Sponsor: ECSS. Funding: \$36,293. [COA]

WEIR, JEFFERY D., Lt Col

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$11,700. [COA]

ZALEWSKI, DANIEL J., Col

“Quadrennial Defense Review Support Studies.” Sponsor: HQ USAF. Funding: \$25,000.

5.5.5. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliations are listed in [] if applicable.

BAUER, KENNETH W., Jr.

Bednar, E.M., Bauer, K.W., and Miller, J.O., “Use of Control Variates in a Large-Scale Aggregated Combat Model”, *Journal of Defense Modeling and Simulation*, 4(1):29-42 (2007). [COA]

Laine, T. I. and Bauer, K.W., "A Mathematical Framework to Optimize ATR Systems with Non-declarations and Sensor Fusion", *Computers & Operations Research*, 35(6):1789-1812 (2008). [COA]

CHRISSIS, JAMES W.

Abramson, M., Audet, C. Chrissis, J., and Walston, J., “Mesh Adaptive Direct Search Algorithms for Mixed Variable Optimization”, *Optimization Letters*, 3(1): 35-47. [COA]

Y. Chan , J. Mahan , J. Chrissis, D. Drake, and D. Wang, “Hierarchical Maximal-Coverage Location-Allocation Case of Generalized Search-and-Rescue”, *Computers and Operations Research*, vol. 35, no. 6, June 2008, pp.1886-1904. [COA]

COCHRAN, JEFFERY K.

Cochran, J.K. and Kaylani, H., "Optimal Design of a Hybrid Push/Pull Serial Manufacturing System with Multiple Part Types", *International Journal of Production Research* 46(4): 949-965 (2008). [COA]

Cochran, J.K. and Roche, K.T., "A Queuing-Based Methodology for Hospital Inpatient Bed Planning", *Journal of the Operational Research Society* 59(11): 1471-1482 (2008). [COA]

COOPER MARTHA C.

Charvet F., Cooper, M.C., and Gardner, J. "The Intellectual Structure of Supply Chain Management: A Bibliometric Approach", *Journal of Business Logistics*, 29(1): 47-73 (2008). [COA]

CUNNINGHAM, WILLIAM A.

Heilmann, S., Cunningham, W. A. and Ward, C., "User Perceptions of In-Transit Visibility Architecture Utility", *Air Force Journal of Logistics*, 32(2): 92-99 (2008). [COA]

DECKRO, RICHARD F.

Hamill, J.T., Deckro, R. F., Wiley, V. D., and Renfro, II, R.S., "Gains, Losses, and Thresholds of Influence in Social Networks", *International Journal of Operational Research*, 2(4): 357-379 (2007).

Artelli M.J., and Deckro, R.F., "Fourth Generation Operations: Principles for the 'Long War'", *Small Wars & Insurgencies*, 19(2): 224-240 (2008).

Bullock, R.K., Deckro, R. F. and Weir J. D., "Methodology for Competitive Strategy Development", *Computers & Operations Research*, 35(2): 1865-1873 (2008).

HILL, RAYMOND R.

Marsh, W. E. and Hill, R.R., "An Initial Agent Behavior Modeling and Definition Methodology as Applied to Unmanned Aerial Vehicle Simulations", *International Journal of Simulation and Process Modeling*, 4(2): 119-129 (2008). [COA]

Cho, Y. K., Moore, J.T., Hill, R.R. and Reilly, C. H., "Exploiting Empirical Knowledge for Bi-Dimensional Knapsack Problem Heuristics", *International Journal of Industrial and Systems Engineering*, 3(5): 530-548 (2008). [COA]

Hiremath, C.S. and Hill, R.R., "New Greedy Heuristics for the Multiple-Choice Multidimensional Knapsack Problem", *International Journal of Operational Research*, 2(4): 495-512 (2008). [COA]

JOHNSON, ALAN W.

Maynard, T., Bell, J. and Johnson, A., "Frustrated Hazardous Material: Military and Commercial Training Implications", *Transportation Journal* 47(1): 30-42 (2008). [COA]

MOORE, JAMES T.

Cho, Y. K., Moore, J.T., Hill, R.R. and Reilly, C.H., "Exploiting Empirical Knowledge for Bi-Dimensional Knapsack Problem Heuristics", *International Journal of Industrial and Systems Engineering*, 3(5): 530-548 (2008). [COA]

OGDEN, JEFFREY A.

Ogden, J.A., Lowry, P.B., Petersen, K.J. and Carter, P.L., "Explaining the Key Elements of Information Systems-Based Supply-Chain Strategy That Are Necessary for Business-to-Business Electronic Marketplace Survival", *Supply Chain Forum: An International Journal*, 9(1): 92-110 (2008).

Foster, S. T. and Ogden, J.A., "On Differences in How Operations and Supply Chain Managers Approach Quality Management", *International Journal of Production Research*, 46(24): 6945-6961 (2008).

Ogden, J.A. and Carter, P.L., "The Supply Base Reduction Process: An Empirical Investigation", *The International Journal of Logistics Management*, 19(1): 5-28 (2008).

Ogden, J. A., Rossetti, C. L., and Hendrick, T. E., "An Exploratory Cross-Country Comparison of Strategic Purchasing", *Journal of Purchasing and Supply Management*, 13(1): 2-16 (2007).

5.5.6. REFEREED CONFERENCE PUBLICATIONS

Note: Research Center affiliations are listed in [] if applicable.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

BAUER, KENNETH W., Jr.

Oxley, M.E., Thorsen, S.N., Schubert, C.M., and Bauer, K.W., "The Evaluation of an ATR System via its ROC Manifold", *11th International Conference on Information Fusion (FUSION 2008)*, June – July 2008 Cologne, Germany. [COA]

Lacey, T.H., Mills, R.F., Raines, R. A., Williams, P. D., Oxley, M.E., Bauer, K.W. and Rogers, S.K., "A Qualia Representation of Cyberspace", *Proceedings of the International Society for Optical Engineering (SPIE) Conference*, April 2008. [COA]

Rogers, S. K., Sadowski, C., Bauer, K. W., Oxley, M. E., Kabrisky, M., Rogers, A. S. and Mott, S. D., "The life and death of ATR/Sensor Fusion and the hope for resurrection" , *Proceedings of SPIE*, March 2008. [COA]

Turnbaugh, M.A. and Bauer, K.W., "HRR Signature Classification using Syntactic Pattern Recognition", *IEEE Aerospace Conference*, March 2008, Big Sky, Montana, USA. [COA]

Turnbaugh, M.A. and Bauer, K.W., "HRR Signature Classification using a Hybrid Composite Classification System", *International Society for Optical Engineering (SPIE) Defense and Security Symposium*, Conference on Automatic Target Recognition XVIII, March 2008, Orlando, Florida, USA. [COA]

Rodriguez, J., Miller, J.O., Bauer, K.W. Jr., and Neher, R.E. Jr., "Methodologies for Aggregating Large Hierarchical Simulation Models" *Proceedings of SPIE Vol 6965-11*, 2008. [COA]

Rodriguez, J., Bauer, K.W. Jr., Miller, J.O., and Neher, R.E. Jr., "Building Prediction Models of Large Hierarchical Simulation Models with Artificial Neural Networks and other Statistical Techniques." *Proceedings of SPIE Vol 6978-21*, 2008. [COA]

Leap, N.J. and Bauer, K.W., "A Confidence Paradigm for Classification Systems," *Proceedings of SPIE – Volume 6968, Signal Processing, Sensor Fusion, and Target Recognition XVII*, Editor: Ivan Kadar, March 2008. [COA]

Friend, M. A. and Bauer, K.W., "Non-Declaration Measures for Classifier Accuracy", *Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE 2006)*, November 2007, St. Louis, Missouri, USA. [COA]

Leap, N. J. and Bauer, K.W., "Confidence Framework in Classification", *Proceedings of the Artificial Neural Networks In Engineering Conference (ANNIE 2006)*, November 2007, St. Louis, Missouri, USA. [COA]

COCHRAN, JEFFERY K.

Burdick, T.L. and Cochran, J.K., “Right on ‘Queue’: Engineers Set the Stage for Healthcare Improvement” with Associated Paper “Forming a Healthcare Engineering Partnership: The Banner Health / Arizona State University Experience”, *HIMSS Conference & Exhibition*, 2008, Orlando, Florida, USA. [COA]

COOPER, MARTHA C.

Cooper, M. C., Helper, A., and Ogden, J., “Evaluating the Effectiveness of Balanced Score Card Implementations”, *2008 SOLE Symposium*, August 2008, Orlando, Florida, USA. [COA]

Cooper, M.C., Helper, A. and Ogden, J., “Business Methods Applied in Government”, *2008 POMS Conference*, May 2008, La Jolla, California, USA. [COA]

Burgos-Dominguez, A., Cartwright, H., Cooper, M. C. and Hurst, D., "Women in Logistics 2007: A Global Perspective", *Council of Supply Chain Management Professionals Annual Meeting*, October, 2007, San Antonio, Texas, USA. [COA]

HILL, RAYMOND R.

Hardman, N., Colombi J., Jacques, D. and Hill, R.R., “Improved User Interface Design through Graph-Theoretic Modeling”, *2008 IEEE International Conference on Distributed Human-Machine Systems*, March 2008, Athens, Greece. [COA]

Champagne, L.E., and Hill, R.R., “Agent-Model Validation Based on Historical Data” *Proceedings of the 2007 Winter Simulation Conference*, Institute of Electrical and Electronics Engineers, December 2007, Washington, DC, USA. [COA]

JOHNSON, ALAN W.

Cole, G., Johnson, A.W., and Miller, J.O., “Feasibility Study of Variance Reduction in the Logistics Composite Model”, *Proceedings of the Winter Simulation Conference*, December 2007, Washington, DC, USA. [COA]

MILLER, J.O.

Miller, J.O., “Tutorial: Military Applications of Modeling and Simulation”, *Proceedings of the Industrial Engineering Research Conference 2008*, May 2008, Vancouver, B.C. Canada. [COA]

OGDEN, JEFFREY A.

Cooper, M. C., Helper, A., and Ogden, J., “Evaluating the Effectiveness of Balanced Score Card Implementations”, *2008 SOLE Symposium*, August 2008, Orlando, Florida, USA.

Cooper, M.C., Helper, A. and Ogden, J., “Business Methods Applied in Government”, *2008 POMS Conference*, May 2008, La Jolla, California, USA.

SKIPPER, JOSEPH B., Maj

Skipper, J. B., Landrum, H.W., Huscroft, J.R., Hall, D., Hanna, J., and Peachey, T., “Facilitating Flexibility in Supply Chain Organizations: The Confounding Effect of Information”, *Proceedings of the Americas Conference on Information Systems: Information Systems for Supply Chain Management, the Integration with Globalization Track*, August 2008, Toronto, Ontario, Canada.

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

CHRISSIS, JAMES W.

B. Sparkman, J. Chrissis, and M. Gruber, "Optimization of a Scramjet Fuel Injection Array", 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Victoria, BC, Canada, 10-12 Sept 2008. (Paper was a finalist in student paper competition). [COA]

T. Paciencia and J. Chrissis, "Optimization of Multi-Objective Stochastic Systems Beyond Two Objectives Using Direct Search Methods", 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, Victoria, BC, Canada, 10-12 Sept 2008. (Paper won Best Paper award in student paper competition). [COA]

HALL, SHANE N., Maj

Jacobson, S. H., Sewell, E. C. and Hall, S. N., "Analyzing the General Minimum Cost Vaccine Formulary Selection Problem," *Proceedings of the 2008 NSF Design, Service, and Manufacturing Grantees and Research Conference*, Knoxville, Tennessee, January 2008. [COA]

Kappedal, R., Roesener, A. G. and Hall, S. N., "Intelligence Surveillance and Reconnaissance Asset Assignment for Optimal Mission Effectiveness", *Military Operations Research Society Symposium*, United States Coast Guard Academy, Connecticut, June 2008. [COA]

Illig, A.A., Roesener, A.G., Knighton, S. A. and Hall, S. N., "Hurry Up and Wait ...Optimizing the Initial Skills Training Scheduling Process", *Military Operations Research Society Symposium*, United States Coast Guard Academy, Connecticut, June 2008. [COA]

HILL, RAYMOND R.

Miller, J. O. and Hill, R.R., "Military Applications of Modeling and Simulation", *Proceedings of the 2008 Industrial Engineering Research Conference*, Vancouver, BC, May 2008. [COA]

Heath, B. L. and Hill, R.R., "The Early History of Agent-Based Modeling", *Proceedings of the 2008 Industrial Engineering Research Conference*, Vancouver, BC, Canada, May 2008. [COA]

JOHNSON, ALAN W.

Johnson, A.W. and Servidio, J., "Ground Support Process Time Refinement for Reusable Launch Vehicle Regeneration Modeling", *Proceedings of the American Institute of Aeronautics and Astronautics Space 2008 Conference*, San Diego California, AIAA-2008-7647. [COA]

OGDEN, JEFFREY A.

Brewer B., Ogden, J.A., Ashenbaum, B. and Carter, J.R., "The Link Between Outsourcing Strategy and Performance", published as a full paper and presented at the 19th Annual North American Research/Teaching Symposium on Purchasing and Supply Chain Management, Tempe, Arizona, March 2008.

Ogden, J.A., "Antecedents of Supply Base Reduction Efforts: An Empirical Investigation," 2008 POMS Conference, May 2008, La Jolla, California, USA.

PETTIT, TIMOTHY, J., Lt Col

Pettit, T.J., "Ensuring Supply Chain Resilience," presentation at the 43rd Annual International Logistics Conference and Exhibition, *The International Society of Logistics (SOLE)*, Orlando, Florida, August 2008. [COA]

SKIPPER, JOSEPH B., Maj

Huscroft, J. R, Skipper, J.B., Hall, D. and Mattioda, D., “Improving Flexibility in the Supply Chain: Can Information have a Negative Impact,” *International Society of Logistics (SOLE) Abstracts*, Orlando, Florida, August 2008.

5.5.7. SUBSTANTIAL CONSULTATIONS

Note: Research Center affiliations are listed in [] if applicable.

DECKRO, RICHARD F.

Deckro, R. F., Member Behavioral Influence Analysis workgroup of the Human Factors for Homeland and National Security, Subcommittee of the National Science and Technology Council Committee on Homeland and National Security.

Deckro, R. F., Served as Subject Matter Expert (SME) for Vice Chief of the Joint Staff requested study on Human Network Attack undertaken by the Global Innovation and Strategy Center (GISC), USSTRATCOM. Group leader for conferences breakout groups; Human Network Analysis Conference February 2008.

Deckro, R. F., Requested participant/reviewer at AFOSR Program Review for the *Cognition and Decision, Human Machine Interaction and Social Cultural Modeling Programs*, January 2008, Arlington, VA.

Deckro, R. F., Panel member for AFOSR review of GMU/CMU MURI “Computational Modeling of Cultural Dimensions in Adversary Modeling” for Optional Years Renewal, GMU, November 2007.

Deckro, R. F., Member of Advisory Group on Applications, GMU/CMU MURI “Computational Modeling of Cultural Dimensions in Adversary Modeling” Participated in advisory board meeting, GMU, November 2007.

5.5.8. BOOKS AND CHAPTERS IN BOOKS

Note: Research Center affiliations are listed in [] if applicable.

BAUER, KENNETH W., Jr.

Rodriguez, B.M., Peterson, G.L., and Bauer, K.W., “Fusion of Steganalysis Systems Using Bayesian Model Averaging”, *Advances in Digital Forensics IV*, eds. Shenoi, S., and Ray, I. (2008). [COA]

HALL, SHANE N., Maj

Hall, S.N., Jacobson, S.H., and Sewell, E.C., “Optimizing Pediatric Vaccine Formularies”, *Optimization in Medicine and Biology*, Chapter 4, pp 117-145. Auerbach Publications (Taylor and Francis Group), (2008). [COA]

HILL, RAYMOND R.

Prabhala, S., Ganapathy, S. Narayanan, S., Gallimore, J. J. and Hill, R.R., Model-Based Simulation to Examine Command and Control Issues with Remotely Operated Vehicles. “*Simulation and Modeling: Current Technologies and Applications*”, Chapter 7, El Sheikh, A A.A., Ajeeli, R.. A. and Abu-Taieh, E. M. O. eds. IGI Publishing, Hershey, PA., 199-218, (2008). [COA]

OGDEN, JEFFERY A.

Fawcett, S.E., Ellram, L.M. and Ogden, J.A. “*Supply Chain Management: From Vision to Implementation*”, Prentice Hall, Upper Saddle River, New Jersey, (2007).

5.5.9. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

CHRISSIS, JAMES W.

PRESENTATIONS

Sparkman, B., Chrissis, J. and Gruber, M., “Optimization of a Scramjet Fuel Injection Array”, accepted for presentation at the 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, 10-12 Sept, Victoria, BC, Canada.

Paciencia, T. and Chrissis, J., “Multi-Objective Optimization of Mixed-Variable, Stochastic Systems Using Single-Product Formulations and Aspiration Reservation Levels”, accepted for presentation at the 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, 10-12 Sept, Victoria, BC, Canada.

PROFESSIONAL ACTIVITIES

Track Leader (Optimization Methods), 12th AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, September 2008, Victoria, BC, Canada.

Member of the AIAA Multidisciplinary Design Optimization (MDO) Technical Committee (TC).

Reviewed papers 2008 AIAA/ISSMO Multidisciplinary Analysis and Optimization Conference, September 2008, Victoria, BC, Canada.

Reviewed papers, 2008 AIAA SDM Conference/MDO Specialist Conference, April 2008, Schaumburg, Ill.

Reviewed papers for the MDO sessions at the 2008 AIAA Aerospace Sciences Meeting, January 2008, Reno, NV.

Session chair AIAA Aerospace Sciences Meeting.

Member of the MDO/TC Education Subcommittee.

Reviewer for Military Operations Research.

Reviewer for European Journal of Operational Research.

Committee chair and reviewer scholarships/grants provided by the Buckeye Chapter of AHEPA (American Hellenic Educational Progressive Association).

COCHRAN, JEFFERY K.

PROFESSIONAL ACTIVITIES

Editorial Board, Computers in Industry.

Editorial Board, Journal of Design and Manufacturing Automation.

Editorial Board, International Journal of Simulation and Process Modeling.

Editorial Board, International Journal of Industrial and Systems Engineering.

Editorial Board, International Journal of Mathematics in Operational Research.

Program Committee, IASTED International Conference on Modeling and Simulation.

COOPER, MARTHA C.

PROFESSIONAL ACTIVITIES

Associate Editor, Journal of Operations and Supply Chain Management, 2008.

Associate Editor, Journal of Supply Chain Management, Nov 2008.

Editorial Review Board for the Journal of Business Logistics, 2008 ; Journal of Operations Management, 2008; Journal of Supply Chain Management, 2008; the International Journal of Physical Distribution and Logistics Management, 2008; Journal of Transportation Management, 2008 ; Supply Chain Forum: an International Journal, 2008 .

Production and Operations Management Society (POMS).

2008 Conference Track Chair on Logistics in Government, La Jolla, California.

CUNNINGHAM, WILLIAM A.

PRESENTATIONS

Johnson, J.P., Cunningham, W.A., and Johnson, A.W., “Aggregating Aircraft Mission Capable Rates to Determine Total Aircraft Availability”, INFORMS Annual Meeting, Washington, DC, 2008.

PROFESSIONAL ACTIVITIES

National Testing Committee - American Society of Transportation & Logistics.

Editorial Review Board - Journal of Transportation Management.

Editorial Review Board – Journal of Marketing Theory and Practice.

Editorial Review Board – Air Force Journal of Logistics.

Book Reviewer for Army Logistician.

DECKRO, RICHARD F.

OTHER PUBLICATIONS

Hamill, J.T., Deckro, R.F., Chrissis, J.W., and Mills, R. “Layered Social Networks”, IO Sphere, pp 27-33, 2008.

PRESENTATIONS

Artelli, M., Deckro, R.F., Zalewski, D., Leach, S. and Perry, M., “Modeling Elements of Modern Warfare”, 76th Military Operations Research Society Symposium, June 2008.

Deckro, R. F., “Human Networks: Analysis and Operations”, Air War College's Behavioral Influences Analysis Center's Annual Tools/Computational Approaches/Methods Conference - Inferring Adversary Intent/Estimating Behaviors, Maxwell AFB, March 2008 (Invited Talk).

Perry, M. and Deckro, R.F., “Detecting Edge Structure in Noisy Networks”, INFORMS Seattle, November 2007.

Herbranson, T., Deckro, R.F., Chrissis, J.W. and Hamill, J. T., “Applying the Key Player Problem Negative to Clandestine Networks”, INFORMS Seattle, November 2007.

Leinart, J., Deckro, R.F., Moore, J., Denhard, D., Mills, R., and Perry, M., “Characterizing and Detecting Unrevealed Elements of Network Systems”, INFORMS Seattle, November 2007.

Artelli, M., Deckro, R.F., Zalewski, D., Leach, S., and Perry, M., “Modeling Morale”, Air Force Operations Research Symposium, Colorado Springs, CO, October 2007.

Geffre, J., Deckro, R.F. and Knighton, S., “Clandestine Networks & Operations: A Layered Approach”, Air Force Operations Research Symposium, Colorado Springs, CO, October 2007. (Selected as one of the Outstanding Presentations of the Meeting)

Downs, D. and Deckro, R.F., “Gauging the Commitment of Clandestine Group Members”, Air Force Operations Research Symposium, Colorado Springs, CO, October 2007.

PROFESSIONAL ACTIVITIES

Human, Social, Cultural, and Behavior (HSCB) Workshop at the National Defense University Co-Chaired working group on SSTRO (stability, security, transition, and reconstruction operations). National Defense University, July 2008.

Interagency Coordination Workshop entitled Stability and Reconstruction Operations: Current and Future Applications for Afghanistan. Workshop was sponsored by the U.S. Army Corps of Engineers and the DoD’s Rapid Reaction Technology Office and the host, Gallup, Washington DC, June 2008.

Judge of Student Projects, USMA/DSE Capstone Conference, West Point, May 2008.

Organizing Committee, MORS Cyber & Networking Workshop.

Attended MORS Analyzing the Impact of Emerging Societies on National Security Workshop, Argonne National Laboratory, Argonne, IL, 14-18 April, Co – Chaired Social Network Working Group.

Attended MORS 2008 Education and Professional Development Colloquium, AFIT, Wright-Patterson AFB, March 2008.

Editor, Military Operations Research.

Area Editor, Service Systems, Computers & Industrial Engineering.

Chair, Military Applications Society Awards Committee.

Member, MORS Publication Committee.

Member, Peacekeeping and Stability Operations Institute Academic Consortium.

Member, Advisory Group on Applications, GMU/CMU MURI “Computational Modeling of Cultural Dimensions in Adversary Modeling”.

HILL, RAYMOND R.

OTHER PUBLICATIONS

Parnell, G.S. and Hill, R.R., “Value-Focused Thinking and the Challenges of the Long War”, Military Operations Research, Vol. 13, No. 2, 5-6, June 2008.

Hardman, N., Colombi, J., Jacques, D. and Hill, R.R., “What Systems Engineers Need to Know About Human-Computer Interaction”, IncoSE INSIGHT, Vol. 11, No. 2, 19-23, April 2008.

Hill, R.R., "Discrete-Event Simulation: A First Course", Journal of Simulation, Vol. 1, No. 1, 147-148, Book Review, 2007.

PRESENTATIONS

Champagne, L. and Hill, R.R., "Agent-Model Validation Based on Historical Data," 2007 Winter Simulation Conference, Washington, DC, December 2007.

Miller, J. O. and Hill, R.R., "Military Applications of Modeling and Simulation", 2008 Industrial Engineering Research Conference, Vancouver, BC, May 2008.

Heath, B. L. and Hill, R.R., "The Early History of Agent-Based Modeling", 2008 Industrial Engineering Research Conference, Vancouver, BC, May 2008.

Hill, R.R., Mahadevan, S., Gripper, M., Militello, L. and Bowers, D., "Interruptions: Influence on Trust and Coordination in Small Virtual Teams," 2008 Industrial Engineering Research Conference, Vancouver, BC, May 2008.

PROFESSIONAL ACTIVITIES

Session Chair, Military Track, 2007 Winter Simulation Conference, Washington DC, December 2007.

Track Chair, Modeling and Simulation Track, 2008 Industrial Engineering Research Conference, Vancouver BC, May 2008.

Session chair, 2008 Industrial Engineering Research Conference, Vancouver, BC, May 2008.

Associate Editor, Military Operations Research.

Associate Editor, Journal of Simulation.

Associate Editor, Journal of Defense Modeling and Simulation.

Associate Editor, International Journal of Mathematics in Operational Research.

Guest Editor, Military Operations Research, special issue on Value Focused Thinking, Volume 8, Number 2, June 2008.

Proceedings Co-Editor, 2008 Winter Simulation Conference, Miami FL, December 2008 (editorial work accomplished during FY 2008).

JOHNSON, ALAN W.

PRESENTATIONS

Servidio, J. and Johnson A.W., "Parameterizing Activity Time Distributions for Reusable Military Launch Vehicle Regeneration Modeling", 76th MORS Symposium, US Coast Guard Academy, June 2008.

Servidio, J., Michalski, M., Stiegelmeier, A., Pope, T., Johnson, A.W. and Martindale, M., "Simulating Reusable Launch Vehicle Regeneration Activities between Flights", Responsive Access to Space Technology Exchange, Dayton, May 2008.

Kretser, M. and Johnson, A.W., "Modeling Predator UAV Operations" INFORMS National Meeting, Seattle, November 2007.

PROFESSIONAL ACTIVITIES

Track co-chair (eight sessions), Space Logistics, Tourism and Colonization, AIAA Space 2008 Conference, September 2008, San Diego, California.

Session Chair, Defense Supply Chain Analysis, INFORMS National Meeting, Seattle, Washington November 2007.

Secretary/Treasurer, Military Applications Society, INFORMS.

MILLER, JOHN O.

PRESENTATIONS

Rodriguez, J., Miller, J.O., and Bauer, K.W. "Aggregation Procedures for Large Hierarchical Simulation Models" Proceedings of Huntsville Simulation Conference, Huntsville, AL, October 2007.

Ponack, R. and Miller, J.O. "Modeling High Energy Liquid Laser Area Defense System (HELLADS) in a Mission Level Simulation", Directed Energy Modeling and Simulation Conference, Monte Rey, CA, March 2008.

PROFESSIONAL ACTIVITIES

INFORMS Simulation Society Council Representative (elected position).

Associate Editor, International Journal of Operations Research.

Journal referee for Military Operations Research.

Journal referee for International Journal of Logistics: Research and Applications.

Journal referee for The Journal of Defense Modeling and Simulation.

MOORE, JAMES T.

PRESENTATIONS

Moore, J. T., "A New Approach to the Theater Distribution Problem", AFIT Featured Blue Dart, March 2008.

Moore, J.T., "Scheduling Fighter Pilot Training in a Squadron", AFIT Featured Blue Dart, December 2007.

Stone, B.B., Moore, J.T. and Donovan, P.S., "Developing an Excel Decision Support System Using In-Transit Visibility to Decrease DoD Transportation Delays", Military Operations Research Society Symposium, New London, CT, June 2008.

Moore, J.T., "Application of Metaheuristics to Air Force Problems", AFOSR Optimization and Discrete Mathematics Program Review, Arlington, VA, April 2008.

Newlon, T.M., Moore, J.T. and Knighton, S.A., "Mathematical Programming Model for Fighter Squadron Pilot Training Scheduling", Air Force Operations Research Society Symposium, Colorado Springs, CO, October 2007.

PROFESSIONAL ACTIVITIES

Working Group 18 Chair (Strategic Deployment and Distribution), Military Operations Research.

Society (MORS) Symposium, New London, CT, June 2008.

Site Coordinator, MORS Education and Professional Development Colloquium, Air Force Institute of Technology, March 2008.

Session Chair, Military OR Applications, INFORMS, Seattle, WA, November 2007.

Cluster Chair, Military Applications Society, INFORMS, Seattle, WA, November 2007.

OGDEN, JEFFREY A.

PRESENTATIONS

Ogden, J.A., “Antecedents of Supply Base Reduction Efforts: An Empirical Investigation,” presented at the 19th Annual Conference of the Production and Operations Management Society, La Jolla, California, May 2008.

Cooper, M.C., Ogden, J.A. and Anderson, B., “Business Methods Applied in Government,” presented at the 19th Annual Conference of the Production and Operations Management Society, La Jolla, California, May 2008.

PETTIT, TIMOTHY J., Lt Col

OTHER PUBLICATIONS

Pettit, T.J., Fiksel, J. and Croxton, K.L., “Can you Measure your Supply Chain Resilience?” Supply Chain and Logistics Journal, 10(1): 21-22 (2008).

PRESENTATION

Pettit, T.J., “Ensuring Supply Chain Resilience,” presentation to the Council of Supply Chain Management Professionals, Columbus Chapter, September 2008.

5.6. DEPARTMENT OF SYSTEMS AND ENGINEERING MANAGEMENT

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Homepage: <http://www.afit.edu/en/env/>

5.6.1	<u>DOCTORAL DISSERTATIONS</u>	129
5.6.2	<u>MASTER'S THESES</u>	129
5.6.3	<u>GRADUATE RESEARCH PAPERS</u>	135
5.6.4	<u>FUNDED RESEARCH PROJECTS</u>	135
5.6.5	<u>REFEREED JOURNAL PUBLICATIONS</u>	136
5.6.6	<u>REFEREED CONFERENCE PUBLICATIONS</u>	138
5.6.7	<u>SUBSTANTIAL CONSULTATIONS</u>	142
5.6.8	<u>BOOKS & CHAPTERS IN BOOKS</u>	143
5.6.9	<u>OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES</u>	144

5.6.1. DOCTORAL DISSERTATIONS

5.6.1.1. SYSTEMS ENGINEERING (DSE)

FORD, THOMAS C., *Interoperability Measurement*. AFIT/DSE/ENV/08-S01. Faculty Advisor: Dr. John M. Colombi. Sponsor: N/A.

5.6.2. MASTER'S THESES

5.6.2.1. COST ANALYSIS (GCA)

VAN DYK, STEFANIE L., *Forecasting Flying Hour Costs of the B-1, B-2, and B-52 Bomber Aircraft*. AFIT/GCA/ENV/08-M02. Faculty Advisor: Lt Col Eric J. Unger. Sponsor: N/A.

5.6.2.2. ENGINEERING MANAGEMENT (GEM)

AL-AHMED, MOHAMED E., *Creating A Level Nine Maintainer Position in the Aircraft Maintenance Training System for the Royal Bahraini Air Force (RBAF)*. AFIT/GEM/ENV/08-S01. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: Bahrain Defense Force.

BEACH, MICHAEL J., *An Analysis of Construction Cost and Schedule Performance*. AFIT/GEM/ENV/08-M02. Faculty Advisor: Maj Sonia E. Leach. Sponsor: N/A.

BURRIS, ANDREW B., *A Qualitative and Quantitative Assessment of Readiness for Organizational Change Literature*. AFIT/GEM/ENV/08-J01. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

CORBIN, REBECCA S., *An Analysis of Groundwater Flow Patterns in a Constructed Treatment Wetland Cell*. AFIT/GEM/ENV/08-M04. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF/A7 and AFCEE.

CRABTREE, DONALD C., *Factors Leading to Effectiveness and Satisfaction in Civil Engineer Information Systems*. AFIT/GEM/ENV/08-M05. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: AFCESA.

CRAIG, DANIEL A., *Development of a Screening Tool to Facilitate Technology of an Innovative Technology to Treat Perchlorate-Contaminated Water*. AFIT/GEM/ENV/08-M06. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: ESTCP.

GRIFFIN, JAMES S., *Impacts of Weather Variations on Energy Consumption Efforts at U.S. Air Force Installations*. AFIT/GEM/ENV/08-M08. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: HQ AFCESA.

HICKMAN, KRISTA M., *A Decision Tool to Evaluate Budgeting Methodologies for Estimating Facility Recapitalization Requirements*. AFIT/GEM/ENV/08-M09. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.

HOWELL, RYAN A., *Bibliometrically Mapping Team Cognition Literature: A Co-citation Analysis*. AFIT/GEM/ENV/08-M10. Faculty Advisor: Lt Col Christopher J. West. Sponsor: AFRL/RH.

KAYS, JUAN A., *Position Characteristics and Their Relationship to Selection for Promotion*. AFIT/GEM/ENV/08-M11. Faculty Advisor: Lt Col Daniel T. Holt. Sponsor: N/A.

LOTT, JANELL M., *Physical Attractiveness, Social Network Location, and Performance in the Military*. AFIT/GEM/ENV/08-M12. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.

NIELSEN, TYLER K., *Characterization Patterns of MILCON Project Contract Modifications*. AFIT/GEM/ENV/07-D01. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AF/ILE.

- NYIKOS, DAVID M., *Sustainable Design Policy and Leadership in Energy and Environmental Design Certification*. AFIT/GEM/ENV/08-M14. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: HQ AFCEE/TBD.
- OLSEN, NATHAN P., *The Impact of Operations Tempo (OPTEMPO) on Intentions to Depart the Military. Does the Increase of OPTEMPO Cause Action?* AFIT/GEM/ENV/08-M15. Faculty Advisor: Maj Sharon G. Heilmann. Sponsor: N/A.
- ROSNER, JAMES W., *An Analysis of the Design-Build Delivery Method in Air Force Military Construction*. AFIT/GEM/ENV/08-M16. Faculty Advisor: Lt Col Christopher J. West. Sponsor: AFMC MSO/A7M and ACC/CCTT.
- SOTOROPOLIS, THEODORE J., *Selecting the Best Thermal Building Insulation Using a Multi-Attribute Decision Model*. AFIT/GEM/ENV/08-M17. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.
- STUMME, LUKE D., *Optimal Adoption of Green Roofs: Hydrology and Public Finance Applications*. AFIT/GEM/ENV/08-M18. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: HQ AFCEE/TBD.
- THOMAS, BENJAMIN J., *Mining Association Rules Between Credits in the Leadership in Energy and Environmental Design for New Construction (LEED-NC) Green Building Assessment System*. AFIT/GEM/ENV/08-M19. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFCEE.
- TRAMEL, BILLY D., *Factors that may Affect Retention of Enlisted Explosive Ordinance Disposal Airmen*. AFIT/GEM/ENV/08-J02. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.
- VERMILLION, RICK E., *Comparative Kinetics and Distribution to Target Tissues of Organophosphates Using Physiologically-Based Pharmacokinetic Modeling*. AFIT/GEM/ENV/08-M20. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: 711 HPW/RHPB.
- WALLACE, RONALD S., *How a Multidimensional View of Perceived Organizational Support Impacts Self-Efficacy and Task Understanding During Training for Boundary Spanning Tasks*. AFIT/GEM/ENV/08-M21. Faculty Advisor: Lt Col Alexander J. Barelka. Sponsor: N/A.
- WEVER, PAUL S., *A System Dynamic Model of Leader Emergence*. AFIT/GEM/ENV/08-M22. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: N/A.
- WHEELDON, JACK G., *An Evaluation and Implementation Guide for Current Groundwater Mass Flux Measurement Practices*. AFIT/GEM/ENV/08-M23. Faculty Advisor: Dr. Mark N. Goltz. Sponsor: US EPA-NRMRL-GWERD.
- YESUÉ, ELIZABETH A., *A Cocitation Analysis of Crisis Management Literature*. AFIT/GEM/ENV/08-M01. Lt Col Christopher J. West. Sponsor: AF/A7.

5.6.2.3. ENVIRONMENTAL ENGINEERING AND SCIENCE (GES)

- CLARKE, BRIAN M., *In Vitro Toxicity and Inflammation Response Induced by Copper Nanoparticles in Rat Alveolar Macrophages*. AFIT/GES/ENV/08-M01. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFRL/RHPB.
- KOCHERSBERGER, JONATHAN P., *Linking Embeddedness and Macroinvertebrate in Two Southwest Ohio Streams*. AFIT/GES/ENV/08-M03. Faculty Advisor: Lt Col David A. Smith. Sponsor: Wright State University Dept of Earth and Environmental Sciences.
- LEON, ELISABETH M., *Molecular Characterization of Wetland Soil Bacterial Communities in Constructed Mesocosms*. AFIT/GES/ENV/08-M04. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: N/A.

SEAMAN, GREGORY G., *Optimization of Therapeutic Strategies for Organophosphate Poisoning*. AFIT/GES/ENV/08-M06. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: HQ USAF Surgeon General and Joint Program Executive Office for Chemical and Biological Defense.

THOMPSON, IAN F., *Oxygenation of the Root Zone and TCE Remediation: A Plant Model of Rhizosphere Dynamics*. AFIT/GES/ENV/08-M07. Faculty Advisor: Dr. Michael L. Shelley. Sponsor: AF/A7 and AFCEE/ERD.

5.6.2.4. INFORMATION RESOURCE MANAGEMENT (GIR)

ASCHENBRENNER, BRIAN D., *Identification of Command and Control Information Requirements for the Cyberspace Domain*. AFIT/GIR/ENG/08-01. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFIOC/IO.

ASHE, ERIC M., *An Analysis of Critical Technology Identification and AntiTamper Protection in Department of Defense Acquisition Programs*. AFIT/GIR/ENV/08-M01. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/RYT.

BECHTLOFF, RYAN D., *An Analysis of Information Assurance Risk Management Methods for Use in Embedded Weapons Systems*. AFIT/GIR/ENV/08-M02. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: ASC/ENAS.

CHESSMAN, JOHN A., *A Delphi Study of HIPAA Compliance to Battlefield Medical Evacuation*. AFIT/GIR/ENV/08-M03. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: 88 MDSS/SGSN.

COWAN, ROBERT M., *An Application and Assessment of Attack and Protection Tree Methodologies In The Evaluation of Risk in an Embedded Weapon System*. AFIT/GIR/ENV/08-M04. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: ASC/ENAS.

EDWARDS, MICHAEL T., *Strategies for Minimizing Monetary Loss in the Department of Defense Budget Through Use of Financial Derivatives*. AFIT/GIR/ENV/08-M05. Faculty Advisor: Lt Col Jeffrey S. Smith. Sponsor: N/A.

FRUGÉ, JOHN W., *Comparing Information Assurance Awareness Training for End-Users: A Content Analysis Examination of Air Force and Defense Information Systems Agency User Training Modules*. AFIT/GIR/ENV/08-M07. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: SAF/XCPPI.

GOUGH, DAVID P., *A Multiple Case Study Analysis of Digital Preservation Techniques Across Government, Private, and Public Service Organizations*. AFIT/GIR/ENV/08-M08. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

HAAN, NICHOLAS W., *Examination of Insider Threat Detection within a Generic Unmanned Aerial Vehicle System*. AFIT/GIR/ENV/08-M09. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: ASC/ENAS.

HARRIS, RANDY M., *An Analysis of the Effectiveness of the International Military Education and Training Program*. AFIT/GIR/ENV/08-M10. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: DISAM/DI.

HELLESEN, DENZIL L., *An Analysis of Information Asset Valuation (IAV) Quantification Methodology for Application with Cyber Information Mission Impact Assessment (CIMIA)*. AFIT/GIR/ENV/08-M11. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: 711th HPW/RHX.

KETTLES, THOMAS R., *Integration of Information Operations Theory into the Corporate Air Force*. AFIT/GIR/ENG/08-02. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AETC/SOC/DE.

KINLEY, KELLI S., *What Constitutes an Act of War in Cyberspace*. AFIT/GIR/ENV/08-M12. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: N/A.

MAXON, RYAN A., *Software Assurance Best Practices for Air Force Weapon and Information Technology Systems - Are We Bleeding?* AFIT/GIR/ENV/08-M13. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: N/A.

MOSELEY, MICHAEL W., *A Case-Based Exploration of Task/Technology Fit in a Knowledge Management Context*. AFIT/GIR/ENV/08-M14. Faculty Advisor: Maj Jason M. Turner. Sponsor: Oklahoma State University Spears School of Business.

NICHOLSON, BYRON D., *A Delphi Study Assessing Long-term Access to Electronic Medical Records (EMR)*. AFIT/GIR/ENV/08-M15. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

NORGAARD, JASON C., *An Examination Into How Group Performance is Influenced by Various Communication Channels*. AFIT/GIR/ENV/08-M16. Faculty Advisor: Dr. Alan R. Heminger. Sponsor: N/A.

OTTO, ANTHONY R., *Scripted Mobile Network Routing in a Contested Environment*. AFIT/GIR/ENG/08-03. Faculty Advisor: Maj Scott A. Graham. Sponsor: AFOSR/NM.

PAGUIRIGAN, HENRY G., *Suspicion Modeling in Support of Cyber-Influence Operations/Tactics*. AFIT/GIR/ENV/08-M17. Faculty Advisor: Maj Jason M. Turner. Sponsor: N/A.

SAAVEDRA, FRANCIS M., *A Maturity Model and Architecture Definition to Support Graduate Distance Learning*. AFIT/GIR/ENV/08-M19. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFIT/SC.

SCHEERES, JAMISON W., *Establishing the Human Firewall: Reducing an Individual's Vulnerability to Social Engineering Attacks*. AFIT/GIR/ENG/08-04. Faculty Advisor: Dr. Robert F. Mills. Sponsor: AFRL/RHX.

SORRELS, DAVID M., *A System Architecture for Cyber Incident Mission Impact Assessment*. AFIT/GIR/ENV/08-M20. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: AFRL/RHX.

STRATTON, MARK A., *An Investigation of Limitations in the Accuracy of Time-to-Location Internet Protocol Geolocation*. AFIT/GIR/ENV/08-M21. Faculty Advisor: Dr. Michael R. Grimaila. Sponsor: NASIC/SMAL.

TRIPLETT, JOHNNY E., *The Effects of Commercial Video Game Playing: A Comparison of Skills and Abilities for the Predator UAV*. AFIT/GIR/ENV/08-M22. Faculty Advisor: Maj Jason M. Turner. Sponsor: 711 HPW/RWPT.

WERLING, JOSEPH B., *An Exploratory Examination of Social Website Quality*. AFIT/GIR/ENV/08-M23. Faculty Advisor: Lt Col Alexander J. Barelka. Sponsor: N/A.

WHITFIELD, JOHN F., *An Empirical Investigation of Factors Influencing Knowledge Management System Success*. AFIT/GIR/ENV/08-M24. Faculty Advisor: Maj Jason M. Turner. Sponsor: William S. Spears School of Business; Oklahoma State University-Main Campus.

WILLIAMS, DANIEL J., *An Analysis of the Factors Affecting Training Transfer Within the Work Environment*. AFIT/GIR/ENV/08-M25. Faculty Advisor: Dr. Michael T. Rehg. Sponsor: N/A.

WILLIS, WARD G., *Risk Propensity and Knowledge Sharing Intentions of Individuals in a Downsized Organization*. AFIT/GIR/ENV/08-M26. Faculty Advisor: Lt Col Alexander J. Barelka. Sponsor: AFPC/DPS.

ZAMORA, EDGARD I., *High Performing Teams: The Moderating Effects of Communication Channels*. AFIT/GIR/ENV/08-M27. Faculty Advisor: Maj Jason M. Turner. Sponsor: N/A.

5.6.2.5. RESEARCH AND DEVELOPMENT MANAGEMENT (GRD)

CHAUSSE, JEAN P., *Impact of Language Immersion Programs on Foreign Language*. AFIT/GRD/ENV/08-M02. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: SAF and AF/A1.

CONFER, BRIAN S., *An Analysis of Second-Tier Arms Producing Country Offset Policies: Technology Transfer and Defense Industrial Base Establishment*. AFIT/GRD/ENV/08-M03. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: N/A.

DIAS, SANDRA J., *Characterization of a Fluorescent Protein Reporter System*. AFIT/GRD/ENV/08-M04. Faculty Advisor: Dr. Charles A. Bleckmann. Sponsor: AFRL/RHPB.

GALLUP, HEATHER L., *Blending the Battlefield: An Analysis of Using Private Military Companies to Support Military Operations in Iraq*. AFIT/GRD/ENV/08-M05. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: National Defense University.

GOEHRING, SIDNEY W., *An Analysis of Competencies for Managing Science and Technology Programs*. AFIT/GRD/ENV/08-M06. Faculty Advisor: Dr. Dennis D. Strouble. Sponsor: HQ AFMC/A5S.

GRIGORIAN, REZA A., *Assessment of the Current Cultural Awareness and Training for the Air Force Contingency Contracting Officer*. AFIT/GRD/ENV/08-M07. Faculty Advisor: Dr. Michael T. Reh. Sponsor: DAU/Midwest Region.

POGORZELSKI, WILLIAM A., *Software Acquisition Improvement in the Aeronautical Systems Center*. AFIT/GRD/ENV/08-S1. Faculty Advisor: Lt Col Brian Hermann. Sponsor: N/A.

SHAHADY, DAVID E., *Understanding the Emergence of Disruptive Innovation in the Air Force Science and Technology Organizations*. AFIT/GRD/ENV/08-M10. Faculty Advisor: Dr. Alfred E. Thal, Jr. Sponsor: AFRL/CA and AFRL/RV.

5.6.2.6. INDUSTRIAL HYGIENE (GIH)

MCCORMACK-BROWN, STEPHANIE D., *In Vitro Toxicity of Aluminum Nanoparticles in Human Keratinocytes*. AFIT/GIH/ENV/08-M01. Faculty Advisor: Maj Jeremy M. Slagley. Sponsor: 711 HPW/RH.

SCHNEIDER, DANIEL J., *Three Models of Anthrax Toxin Effects on the MAP-Kinase Pathway and Macrophage Survival*. AFIT/GIH/ENV/08-M02. Faculty Advisor: Maj Jeremy M. Slagley. Sponsor: AFRL/RHPB (AFMC).

5.6.2.7. LOGISTICS MANAGEMENT (GLM)

HOLLAND, JEFFREY G., *Evaluating Experiential Leader Development: A Programmatic of the Effectiveness of US Air Force Squadron Officer School Curricula*. AFIT/GLM/ENV/08-M01. Faculty Advisor: Lt Col Kent C. Halverson. Sponsor: SOC/DES (AETC).

5.6.2.8. GRADUATE SYSTEMS ENGINEERING (GSE)

ALEXANDER, JEFF A., CHARLES-VICKERS, MARTHA, SMITH, TALBOT L., and VICKERS, MICHAEL S., *Operationally Responsive Space: An Architecture and Enterprise Model for Adaptive Integration, Test and Logistics*. AFIT/GSE/ENV/08-J01DL. Faculty Advisor: Dr. Joseph W. Carl. Sponsor: Sandia National Laboratory.

BROWN, JASON L. and HANSON, TRAVIS J., *A Systems Engineering Process for an Integrated Structural Health Monitoring System for Aging Aircraft III*. AFIT/GSE/ENV/08-M03. Faculty Advisor: Dr. Som R. Soni. Sponsor: AFRL/RX.

BROWN, RICHARD A., CARTWRIGHT, ARTHUR D., and MCCLAIN, BRYON E., *Evaluation of Joint Precision Airdrop System Aircraft Integration Concepts Utilizing Activity-Based Methodology*. AFTI/GSE/ENV/08-M04. Faculty Advisor: Dr. Joseph W. Carl. Sponsor: 516 AESW/JPD.

CARTWRIGHT, ARTHUR D., See BROWN, RICHARD A.

CHARLES-VICKERS, MARTHA, See ALEXANDER, JEFF A.

DAWLEY, LYLE M., LONG, ALICE M., and MARENTETTE, LENORE A., *Developing a Decision Model for Joint Improvised Explosive Device Defeat Organization (JIEDDO) Proposal Selection*. AFIT/GSE/ENV/08-J01. Faculty Advisor: Maj Shane A. Knighton. Sponsor: JIEDDO.

HANSON, TRAVIS J., See BROWN, JASON L.

HARIHARAN, ANIL N., *Long Range Strike 2035: An Analysis of Functional Autonomy*. AFIT/GSE/ENV/08-M05. Faculty Advisor: Lt Col Joerg D. Walter. Sponsor: AFRL/RBAA.

HUMPHREYS, CLAY J., *Systems Engineering Analysis for Transition of the Ground Hardness Technology Demonstrator*. AFIT/GSE/ENV/08-M02. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RX.

LONG, ALICE M., See DAWLEY, LYLE M.

LOUIE, ALAN K., See. HARIHARAN, ANIL N.

MAILLOUX, LOGAN O., See HUMPHREYS, CLAY J.

MARENTETTE, LENORE A., See DAWLEY, LYLE M.

MCCLAIN, BRYON E., See BROWN, RICHARD A.

RIVERA, SCOTT V., See. HARIHARAN, ANIL N.

ROACH, NEAL R., ROHE, WAYNE C., and WELTY, NATHAN F., *A System Engineering Approach to the Design of a Spacecraft Dynamics and Control Testbed*. AFIT/GSE/ENV/08-M01. Faculty Advisor: Dr. Jonathan T. Black. Sponsor: N/A.

ROHE, WAYNE C., See ROACH, NEAL R.

SAKRYD, GREGORY A., *Systems Engineering Analysis for the Development of the Fleeting Target*. AFIT/GSE/ENV/08-M06. Faculty Advisor: Dr. David R. Jacques. Sponsor: AFRL/RX and AFRL/RB.

SMITH, TALBOT L., See ALEXANDER, JEFF A.

SPEAR, GRANT E., See HUMPHREYS, CLAY J.

VICKERS, MICHAEL S., See ALEXANDER, JEFF A.

WELTY, NATHAN F., See ROACH, NEAL R.

5.6.3. GRADUATE RESEARCH PAPERS

5.6.3.1. GRADUATE SYSTEMS ENGINEERING (ISE)

BORNEJKO, TRINA L., GLASSCOCK, CHARLES G. and SPRENKLE, DENNIS R., *Creating a Discrete Event Simulation to Determine the Military Worth of Developing an Electronic Warfare Battle Manager Function within an Airborne Electronic Attack System of Systems Architecture*. AFIT/ISE/ENV/08-J05. Faculty Advisor: Dr. David R. Jacques. Sponsor: ASC/XRS.

BROWN, KYLE D., LITTLE, ADAM W. and MUHA, MATTHEW T., *Capital Investment Management for Air Force Reserve Command (AFRC) Information Technology (IT)*. AFIT/ISE/ENV/08-J03. Research Advisor: Dr. John M. Colombi. Sponsor: HQ AFRC.

ELLER, JOHN W., HAZEL, BRIAN and ROONEY, BRENDAN D., *Global Persistent Attack: A Systems Architecture, Process Modeling, and Risk Analysis Approach*. AFIT/ISE/ENV/08-J04. Faculty Advisor: Maj Jeffrey D. Havlicek. Sponsor: HQ ACC/A5SC.

GLASSCOCK, CHARLES G., See BORNEJKO, TRINA L.

HAZEL, BRIAN, See ELLER, JOHN W.

LITTLE, ADAM W., See BROWN, KYLE D.

MUHA, MATTHEW T., See BROWN, KYLE D.

O'MALLEY, DAVID R., and ZALL, JONATHAN E., *Architecting Cognition Within the Department of Defense Architecture Framework*. AFIT/ISE/ENV/08-J06. Research Advisor: Dr. John M. Colombi. Sponsor: AFRL/RH.

ROONEY, BRENDAN D., See ELLER, JOHN W.

SPRENKLE, DENNIS R., See BORNEJKO, TRINA L.

ZALL, JONATHAN E., See O'MALLEY, DAVID R.

5.6.4. FUNDED RESEARCH PROJECTS

Note: Research Center affiliation is listed in [] if applicable.

BARELKA, ALEXANDER J., Lt Col

"Cyber Deny and Disrupt." Sponsor: AFRL/RH. Funding: \$45,000.

"The Influence of Pop-Culture IT." Sponsor: AFRL/RH. Funding: \$20,000.

GRIMAILA, MICHAEL R.

"Towards Real-Time Cyber Incident Mission Impact Assessment." Sponsor: AFRL/RH. Funding: \$25,000. [CCR]

HAVLICEK, JEFFREY D., Maj

"Net-Centric Joint Force Protection Values." Sponsor: 642nd ESS. Funding: \$40,578. [CSE]

"Resourcing Global Strike or Global Persistent Attack Architecture." Sponsor: ACC. Funding: \$28,974. [CSE]

JACQUES, DAVID R.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$322,140. [CSE]

“Human Systems Interface Research.” Sponsor: AFRL/RH. Funding: \$30,000. [CSE]

“Space Systems Engineering Case Studies.” Sponsor: SAF. Funding: \$60,000. [CSE]

REHG, MICHAEL T.

“Effectiveness of the International Military Education and Training Program.” Sponsor: DISAM. Funding: \$30,385.

SLAGLEY, JEREMY M., Maj

“Partial Enclosures for Noise and Dust Control in Underground Longwall Coal Mining.” Sponsor: NIOSH. Funding: \$7,700.

SONI, SOM R.

“Optimization of Z-Pinning Volume Fraction in Joints for Structural Integrity.” Sponsor: DAGSI. Funding: \$20,160. [CSE]

STROUBLE, DENNIS D.

“Strategic Information System Architecture.” Sponsor: HQ AFMC/A6. Funding: \$30,000. [CSE]

WALTER, JOERG D., Lt Col

“Impacts of Uninhabited Long-Range Strike Aircraft.” Sponsor: AFRL/RB. Funding: \$25,000. [CSE]

5.6.5. REFEREED JOURNAL PUBLICATIONS

Note: Research Center affiliation is listed in [] if applicable.

BLECKMANN, CHARLES A.

Shelley, M.L, Wagner, A.J., Hussain, S.M., and Bleckmann, C.A., “Modeling the in vivo case with in vitro nanotoxicity data”, *International Journal of Toxicology* 27 (5), pp 359-368, 2008.

Ford, T.C., Colombi, J.M., Jacques D.R., and Graham, S.R., (2008, 8 Aug 2008). “On the application of classification concepts to systems engineering design and evaluation,” *Journal of Systems Engineering*. Available: www3.interscience.wiley.com/journal/116837515/issue. [CSE]

GOLTZ, MARK N.

Huang, J., J.A. Christ, M.N. Goltz, “An Assembly Model for Simulation of Large-Scale Ground Water Flow and Transport”, *Ground Water*, Vol.46, No.6, 2008, pp. 882-892.

Goltz, M.N., J. Huang, M.E. Close, M.J. Flintoft, L. Pang, “Use of Tandem Circulation Wells to Measure Hydraulic Conductivity Without Groundwater Extraction”, *Journal of Contaminant Hydrology*, Vol 100, 2008, pp.127-136, 2008.

Goltz, M.N., “The Relationship between Environmental Sustainability and the Military Mission, *Korean Journal of Security Affairs*, Vol.12, No.2, 2007, pp.65-75.

GRMAILA, MICHAEL R.

Choobineh, J., Dhillon, G., Grmaila, M.R., and Rees, J., "Management of Information Security: Challenges and Research Directions," *Communications of the Association for Information Systems*, Vol. 20, No.57, 2008, 958-971. [CCR]

Yates, H. and Grmaila, M.R., "A Systematic Approach to Securing our Space Assets," *High Frontier Journal*, Vol. 4, No. 2, March 2008, pp. 48-53. [CCR]

HOLT, DANIEL T., Lt Col

Holt, D. T. & Jung, H. H., "The development of a Korean version of a core-self evaluations scale" *Psychological Reports*, Vol.103, 2008, pp. 415-425.

Heilmann, S. G., Holt, D. T., & Rilovick, C. Y., "Effects of career plateauing on turnover: A test of a model." *Journal of Leadership & Organizational Studies*, Vol.15, No 1, 2008, pp. 59-68.

Muczyk, J. P. & Holt, D. T. "Toward a cultural contingency model of leadership," *Journal of Leadership & Organizational Studies*, Vol. 14, No. 4, 2008, pp. 277-286.

Wood, C. C., Holt, D. T., Reed, T. S., & Hudgens, B. J., "Entrepreneurial mindset in United States Air Force organizations: Antecedents and outcomes," *Journal of Small Business and Entrepreneurship*, Vol. 21, No. 1, 2008, pp. 117-132.

Holt, D. T., Bartczak, S. E., Clark, S. W., & Trent, M. R., "The development of an instrument to assess readiness for knowledge management," *Knowledge Management Research & Practice*, Vol. 5. No. 2, 2007, pp. 75-92.

Rutherford, M. W. & Holt, D. T. , "Corporate entrepreneurship: An empirical look at the innovativeness dimension and its antecedents," *Journal of Organizational Change Management*, Vol. 20., No. 2, 2007, pp. 429-446.

Holt, D. T., Armenakis, A. A., Harris, S. G., & Feild, H. S., "Readiness for organizational change: The systematic development of a scale," *Journal of Applied Behavioral Science*, Vol. 42, No. 2, 2007.

Holt, D. T., Rutherford, M. W., & Clohessy, G. R., "Corporate entrepreneurship: An empirical look at individual characteristics, context, and process", *Journal of Leadership & Organizational Studies*, Vol.13 No.4, 2007, pp. 40-54.

Holt, D. T., Rehg, M. T., Lin, J. S., & Miller, J. C., "An application of the unfolding model to explain turnover in a sample of military officers", *Human Resource Management*, Vol. 46, No. 1, 2007, pp. 35-49.

JACQUES, DAVID R.

Ford, T.C., Colombi, J.M., Jacques D.R., and Graham, S.R., (2008, 8 Aug 2008). "On the application of classification concepts to systems engineering design and evaluation," *Journal of Systems Engineering*. Available: www3.interscience.wiley.com/journal/116837515/issue. [CSE]

SHELLEY, MICHAEL L.

Shelley, M.L, Wagner, A.J., Hussain, S.M., and Bleckmann, C.A., "Modeling the in vivo case with in vitro nanotoxicity data", *International Journal of Toxicology* 27 (5), pp 359-368, 2008.

Amon, J.P., Agrawal, A., Shelley, M.L., Opperman, B.C., Enright, M.P., Clemmer, N.D., Slusser, T., Lach, J., Sobolewski, T., Gruner, W., and Entingh, A.C., "Development of a wetland constructed for the treatment of groundwater contaminated by chlorinated ethenes," *Ecological Engineering*, Vol. 30, No.1, 2007, pp. 51-66.

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Slagley, J.M., and Guffey, S.E., "Effects of Cross-sectional Partitioning on Active Noise Control in Round Ducts," *Journal of Occupational and Environmental Health*, Vol.4, No. 10, 2007, pp. 751-761.

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Badiru, A., "Qualitative Approach to Engineering Project Optimization," *Proceedings of 2008 Industrial Engineering Research Conference (IERC)*, 17-21 May, 2008, Vancouver, Canada.

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5.6.7. SUBSTANTIAL CONSULTATIONS

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Grimaila, Michael. R., “Advisor: Analysis of the Critical Program Identification and Protection Process,” U.S. Army Core of Engineers - Security and Intelligence Division; Washington, D.C., 2008-Present.

Grimaila, Michael. R., “Advisor: Quantification of Security within Embedded Weapon Systems,” Aeronautical Systems Division; Security Assessment Group; Wright-Patterson AFB, OH, 2007-Present.

Grimaila, Michael. R., “Advisor: Improving First Responder Technologies,” Air Force Radiation Assessment Team (AFRAT); San Antonio, TX; 2007-Present.

HASTY, BRYAN K.

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JACQUES, DAVID R.

Jacques, David R. – Scholar in Residence for the Air Force Center for Systems Engineering. Provided consultation services regarding implementation of capability based development and early application of Systems Engineering to numerous high level DoD acquisition executives, user requirements organizations and external review panels. Provided support and report findings to Independent Review Team for the Air Force Research Laboratory surveying the application of Systems Engineering in the Defense Laboratory environment.

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5.6.9. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

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Soni, S.R., Freels, J., and Kuhn, J., "Mode I Failure in Z-Pinned Co-Cured Laminated Composites", *SAMPE Fall Technical Conference and Exhibition*, 8-11 September 2008, Cook Convention Center, Memphis, TN.

THAL, ALFRED E., Jr.

Goltz, M., D. Craig, A. Thal, D. Felker, W. Powell, J. Patterson, R. Parette, F. Cannon, T. Peschman, D. Gillen, C. Lutes, "A Screening Model for Design and Costing of an Innovative Technology to Treat Perchlorate-Contaminated Groundwater," Proceedings, Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, 19-22 May 2008.

Henderson, T., D. Garcia, C.C. Lutes, D.S. Liles, J. Graham, T. Peschman, F. Cannon, J. Patterson, R. Parette, M.N. Goltz, D. Felker, A. Thal, and D. Craig, "Tailored Granular Activated Carbon for Wellhead Perchlorate Treatment," Proceedings, Sixth International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Monterey, California, 19-22 May 2008.

Thal, Alfred E., Jr., Larry K. Isaacs, and Sonia E. Leach, "Using Statistics to Make Environmental Decisions," paper presented at 2008 Environment, Safety, and Occupational Health Training Symposium Proceedings, Reno, Nevada, 268-275, 2008.

Lutes, C.C., T. Henderson, D. Liles, T. Peschman, J. Graham, W. Hinson, F. Cannon, J. Patterson, R. Parette, M. Goltz, D. Craig, D. Felker, A. Thal, Tailored Granular Activated Carbon (TGAC) for Well-Head Perchlorate Treatment, Partners in Environmental Technology Technical Symposium and Workshop, Washington DC, 4-6 December 2007.

Bedingfield, J.D., D.E. Shahady, A.E. Thal, Jr., and A.B. Badiru, "Incorporating Customer Values in Trade-Off Decisions," INFORMS Annual Meeting, Seattle, Washington, November 4-7, 2007.

Braziel, C., Thal, A.E. Jr., and Weir, J.D., "Evaluating the Effectiveness of Utility Privatization Efforts," *Decision Sciences Institute Annual Meeting*, 18-21 November 2007, Phoenix, AZ.

WEST, CHRISTOPHER J., Lt Col

West, C. Oct 2008. Invited Presentation Experiences from US Army In-Lieu-Of Deployment as Bagram Facility Engineer Team Commander Jan-Aug 2008. Air Force Institute of Technology School of Civil Engineering, Wright Patterson AFB, OH.

West, C. Nov 2008. Invited Presentation Experiences from US Army In-Lieu-Of Deployment as Bagram Facility Engineer Team Commander Jan-Aug 2008. Society for American Military Engineers, Kitty Hawk Chapter, Fairborn, OH.

West C. and Landaeta. R., "The Challenges of Researching Team Cognition in Real World Crisis Contexts," *American Society of Engineering Management Annual Conference*, November 2007, Chattanooga, TN.

6. RESEARCH CENTER PUBLICATIONS AND FUNDING INFORMATION

The contents of this section are duplicated data, grouped by center. The information is previously listed within each project's specific department.

6.1. ADVANCED NAVIGATION TECHNOLOGY CENTER

Advanced Navigation Technology Center (ANT)

Director 255-3636 x4580

Executive Program Coordinator 255-3636 x4583

Laboratory Manager 255-3636 x4911

Homepage: <http://www.afit.edu/en/ant>

6.1.1. FUNDED RESEARCH PROJECTS

BLUE, PAUL A., Maj

“Planning, Guidance, and Control for Multiple UAV Cooperative Operations.” Sponsor: AFRL/RB.

Funding: \$35,000. [ANT]

COBB, RICHARD G.

“Systems Engineering Support for Urgent Needs Efforts.” Sponsor: AFRL/RV. Funding: \$35,000. [ANT]

HUFFMAN, RICHARD E., Maj

“Airborne Application of Gravity Gradiometry for Navigation.” Sponsor: AFRL/RW. Funding: \$7,500. [ANT]

“Airborne Application of Gravity Gradiometry for Navigation.” Sponsor: AFRL/RV. Funding: \$7,500. [ANT]

MARTIN, RICHARD K.

“Fusion of Inertial Sensors and Signals of Opportunity for Unassisted Navigation.” Sponsor: AFOSR.

Funding: \$34,507. [ANT]

PACHTER, MEIR,

“New Navigation Techniques.” Sponsor: AFRL/RV. Funding: \$15,000. [ANT]

PETERSON, GILBERT L.

“CANIS-Related Navigation Research Projects for the ANT Laboratory.” Sponsor: AFRL/RV. Funding: \$100,000. [ANT]

“Technical Support: Autonomic Infusion.” Sponsor: AFRL/RV. Funding: \$152,676. [ANT]

RAQUET, JOHN F.

“ANT Center and Laboratory Support per ANT Center Appendix of MOA.” Sponsor: AFRL/RV. Funding: \$196,000. [ANT]

“Development of High Accuracy TSPI Systems.” Sponsor: 746 TS. Funding: \$45,900. [ANT]

“Image-Aided Aerial Refueling.” Sponsor: AFRL/RV. Funding: \$35,000. [ANT]

“Overcoming Geometric Deficiencies in Pseudolite Navigation Systems.” Sponsor: AFOSR. Funding: \$99,752. [ANT]

“Vision Aided Navigation and Control.” Sponsor: AFRL/RW. Funding: \$47,232. [ANT]

VETH, MICHAEL J., Lt Col

“Autonomous Indoor Micro Air Vehicle.” Sponsor: AFRL/RW. Funding: \$125,000. [ANT]

“Synchronized Image-Inertial Data Collection and Processing System.” Sponsor: NGA. Funding: \$30,000. [ANT]

6.1.2. REFEREED JOURNAL PUBLICATIONS

RAQUET, JOHN F.

Jordt, G., Baldwin, R., Raquet, J., and Mullins, B., “Energy Cost and Error Performance of Range-Aware, Anchor-Free Localization Algorithms,” *Ad hoc Networks*, Vol. 6, No. 4, pp. 539-559, June 2008. [ANT]

6.1.3. REFEREED CONFERENCE PUBLICATIONS

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

LAMONT, GARY B.

Nowak, D. J., Price, I., and Lamont, G. B., “Self Organized UAV Swarm Planning Optimization for Search And Destroy Using Swarmfare Simulation,” *Winter Simulation Conference*, Washington, D.C., December 2007. [ANT]

Nowak, D. J., and Lamont, G. B., “Autonomous Agent Behavior Generation Using Multiobjective Evolutionary Optimization,” *ACM Genetic and Evolutionary Computation Conference (GECCO)*, Atlanta, GA, 12-16 July, 2008. [ANT]

Nowak, D. J., Lamont, G. B., and Peterson, G. L., “Emergent Architecture in Self Organized Swarm Systems for Military Applications,” *ACM Genetic and Evolutionary Computation Conference (GECCO)*, Atlanta, GA, 12-16 July, 2008. [ANT]

Ozemir, H. I., Raquet, J. F., and Lamont, G. B., “*Design of a Regional Navigation Satellite System Constellation Using Genetic Algorithms*,” Savannah, GA, August, 2008. [ANT]

MARTIN, RICHARD K.

Martin, R. K., Velotta, J. S., and Raquet, J. F., “Multicarrier Modulation as a Navigation Signal of Opportunity,” in *Proc. IEEE Aerospace Conference*, Big Sky, MT, March 2008. [ANT]

Raquet, J. F., and Martin, R. K., “Non-GNSS Radio Frequency Navigation,” in *Proceedings of International Conference on Acoustics, Speech, and Signal Processing (ICASSP)*, Las Vegas, NV, April 2008. [ANT]

RAQUET, JOHN F.

Martin, R., Velotta, J., and Raquet, J., “Multicarrier Modulations as a Navigation Signal of Opportunity,” *Proceedings of IEEE Aerospace Conference*, Big Sky, MT, Mar 2008. [ANT]

Raquet, J., and Amt, J., “Flight and Ground Testing of a Beacon-Based Precision Navigation System at non-GPS Frequencies,” *Proceedings of AIAA Test & Evaluation Conference*, Los Angeles, CA, Feb 2008. [ANT]

Dainty, B., Raquet, J., and Beckman, R., "Improving Geostationary Satellite GPS Positioning Error Using Dynamic Two-Way Time Transfer Measurements," *Proceedings of 39th Annual Precise Time and Time Interval (PTTI) Systems And Applications Meeting*, Long Beach, CA, Nov 2007. [ANT]

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

LAMONT, GARY B.

Nowak, D. J., Price, I., and Lamont, G. B., "Self Organized UAV Swarm Planning Optimization for Search And Destroy Using Swarmfare Simulation," *Winter Simulation Conference*, Washington, D.C., December 2007. [ANT]

Nowak, D. J., and Lamont, G. B., "Autonomous Agent Behavior Generation Using Multiobjective Evolutionary Optimization," *ACM Genetic and Evolutionary Computation Conference (GECCO)*, Atlanta, GA, 12-16 July, 2008. [ANT]

Nowak, D. J., Lamont, G. B., and Peterson, G. L., "Emergent Architecture in Self Organized Swarm Systems for Military Applications," *ACM Genetic and Evolutionary Computation Conference (GECCO)*, Atlanta, GA, 12-16 July, 2008. [ANT]

Nowak, D. J., and Lamont, G. B., "Autonomous Self Organized UAV Swarm Systems," *National Aerospace and Electronics Conference (NAECON)*, Dayton, OH, July, 2008. [ANT]

Ewing, R.L., Kadrovach, B.A., Eyster, M.D., Lamont, G.B., and Talbert, M.L., "LSA-2m Image Registration for Formation Flying," *National Aerospace and Electronics Conference (NAECON)*, OH, July, 2008. [ANT]

Ozemir, H. I., Raquet, J. F., and Lamont, G. B., "*Design of a Regional Navigation Satellite System Constellation Using Genetic Algorithms*," Savannah, GA, August, 2008. [ANT]

RAQUET, JOHN F.

Schexnayder, C., Raquet, J., Martin, R., and Velotta, J., "Effects of Oversampling and Multipath on Navigation Using OFDM Signals of Opportunity," *Proceedings of ION GNSS-2008*, Savannah, GA, Sep 2008. [ANT]

Ozdemir, H., Raquet, J., and Lamont, G., "Design of a Regional Satellite Navigation System Constellation Using Genetic Algorithms," *Proceedings of ION GNSS-2008*, Savannah, GA, Sep 2008. [ANT]

Nielsen, M., Raquet, J., Veth, M., and Pachter, M., "Development and Flight Test of a Robust Optical-Inertial Navigation System Using Low-Cost Sensors," *Proceedings of ION GNSS-2008*, Savannah, GA, Sep 2008. [ANT]

Amt J, J., Raquet, J.F., and Pachter, M., "Accurate Positioning Using a Planar Pseudolite Array," *Proceedings of IEEE/ION PLANS 2008*, Monterey, CA, May 2008. Raquet J. and Martin, R., "Non-GNSS Radio Frequency Navigation," *Proceedings of ICASSP 2008*, Las Vegas, NV, Mar 2008. [ANT]

VETH, MICHAEL J., Lt Col

Webber, F., Veth, M., Anderson, R., Nielsen, M., "Tightly-Coupled INS, GPS, and Imaging Sensors for Low-Cost, Precision Geolocation," presented at *the Joint Navigation Conference*, Las Vegas, NV, March 2008. [ANT]

Weaver, A., Veth, M., "Autonomous Aerial Refueling: An Image-Aided Approach," presented at *the Joint Navigation Conference*, Las Vegas, NV, March 2008. [ANT]

Gray, J., Veth, M., Raquet, J., “Deeply Integrated Feature Tracking for Embedded Image-Aided Navigation,” presented at *the Joint Navigation Conference*, March 2008. [ANT]

Veth, M.J., Anderson, R., Webber, F., Nielsen, M., “Tightly-Coupled INS, GPS, and Imaging Sensors for Precision Geolocation,” *Sensor Geopositioning Workshop 2008*, National Geospatial-Intelligence Center, Reston, VA, August 2008. [ANT]

Veth, M.J., Anderson, R., Webber, F., “Tightly-Coupled INS, GPS, and Imaging Sensors for Precision Geolocation,” *GeoINT Symposium, National Geospatial-Intelligence Center*, St. Louis, MO, September 2008. [ANT]

Veth, M.J., Anderson, R., Webber, F., Nielsen, M., “Tightly-Coupled INS, GPS, and Imaging Sensors for Precision Geolocation,” *Proceedings of the ION National Technical Meeting*, February 2008. [ANT]

6.2. CENTER FOR DIRECTED ENERGY

Center for Directed Energy [CDE]

Director 255-3636 x7294

Program Coordinator 255-3636

Homepage: <http://www.afit.edu/de/>

6.2.1. FUNDED RESEARCH PROJECTS

BAILEY, WILLIAM F.

“Single Surface Multipactor.” Sponsor: AFRL/RD. Funding: \$30,000. [CDE]

CUSUMANO, SALVATORE J.

“Airborned Aero-Optic Laboratory.” Sponsor: HELJTO. Funding: \$200,760. [CDE]

“HELJTO Model & Simulation.” Sponsor: HELJTO. Funding: \$400,000. [CDE]

“High Energy Laser-Laser Communications Performance Assessments from Remotely-Sensed Measurements of Atmospheric Beam Scatter.” Sponsor: NSF. Funding: \$230,000. [CDE]

PERRAM, GLEN P.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$100,300. [CDE]

“AFOSR Center of Excellence in High Power Gas Phase Electric and Hybrid Laser Kinetics and Spectroscopy.” Sponsor: AFOSR. Funding: \$89,877. [CDE]

“Center of Excellence for Gas Phase Hybrid Lasers: Additional Student Support.” Sponsor: AFOSR. Funding: \$58,492. [CDE]

“Characterization of Excited Atomic Oxygen in RF and Microwave Discharges” Sponsor: AFRL/RD. Funding: \$52,500. [CDE]

“Hazard Analysis for a Forward-Looking Interferometer.” Sponsor: NASA. Funding: \$19,995. [CDE]

“High Power Diode Pumped Alkali Vapor Lasers and Analog Systems.” Sponsor: AFRL/RD. Funding: \$176,000. [CDE]

“Iron Rose II Muzzle Flash Field Test.” Sponsor: NASIC. Funding: \$40,000. [CMSR]

“Measure High Priority Kinetic Rates for DPALS.” Sponsor: AFRL/RD. Funding: \$78,750. [CDE]

“Technical and Administrative Support for the AFOSR Center of Excellence in High Power Gas Phase and Electric Lasers.” Sponsor: AFRL/RD. Funding: \$220,000. [CDE]

RUSSELL, TIMOTHY H., Maj

“Stimulated Brillouin Scattering Phase Conjugation in Optical Fiber.” Sponsor: AFRL/RD. Funding: \$60,000. [CDE]

SCHMIDT, JASON D., Maj

“Advanced Wavefront Control.” Sponsor: AFRL/RD. Funding: \$30,000. [CDE]

6.2.2. FUNDED EDUCATIONAL PROJECTS

CUSUMANO, SALVATORE J.

“2008 AFIT Center for Directed Energy Summer Internship Program.” Sponsor: AFRL/RD. Funding: \$51,168. [CDE]

6.2.3. REFEREED JOURNAL PUBLICATIONS

RUSSELL, TIMOTHY, H., Maj

S. M. Massey and T. H. Russell, “*Phase analysis of stimulated Brillouin scattering in long, graded-index optical fiber*,” *Opt Express* **16**, 11496-11505 (2008). [CDE]

S. M. Massey, J. B. Spring, and T.H. Russell, “*Stimulated Brillouin scattering continuous wave phase conjugation in step-index fiber optics*,” *Opt. Express*, **16** 10873-10885 (2008). [CDE]

SCHMIDT, JASON D., Maj

Venema, T. M., and Schmidt, J. D., “Optical Phase Unwrapping in the Presence of Branch Points,” *Opt. Express*, Vol. 16, p. 6985, May 2008. [CDE]

Louthain, J. A., and Schmidt, J. D., “Anisoplanatism in Airborne Laser Communication,” *Opt. Express*, Vol. 16, p. 10769-10785. July 2008. [CDE]

6.2.4. REFEREED CONFERENCE PUBLICATIONS

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF A FULL PAPER REVIEW

BAILEY, WILLIAM, F.

M. J. Krizo, S. J. Cusumano, R. J. Bartell, S. T. Fiorino, W.F. Bailey, R. L. Beauchamp, M. A. Marciniak, and K. P. Moore, “*A worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths*,” SPIE Defense and Security Symposium, Algorithms and Technologies for Multispectral, Hyperspectral, and Ultraspectral Imagery XIV Orlando, FL, March 2008; Proc. SPIE volume 6966, article no. 696619 (12 pages) (2008). [CDE]

CUSUMANO, SALVATORE J.

Fiorino, S.T., Bartell, R.J. Krizo, M.J. Moore, K.P. and Cusumano, S.J. “*Validation of a worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths*,” Proc. SPIE 7090-70900I (12 pages), SPIE Optics and Photonics, San Diego, CA, August 2008. [CDE]

Krizo, M.J., Cusumano, S.J. Bartell, R.J. Fiorino, S.T., Bailey, W.F, Beauchamp, R.L. Marciniak, M.A. and Moore, K.P. “*A worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths*,” Proc. SPIE 6966, 696619 (12 pages) SPIE Defense and Security Symposium, Orlando, FL, March 2008. [CDE]

Fiorino, S.T., Bartell, R.J. Krizo, M.J. and Cusumano, S.J. “*Propagation variability assessments of ship defense HEL and HPM performance in worldwide maritime boundary layer environments at wavelengths of 1.0642 μm , 2.141 μm , 3.16 mm and 12.2 cm,*” Proc. SPIE 6951, 69510G (12 pages) SPIE Defense and Security Symposium, Orlando, FL, March 2008. [CDE]

Fiorino, S.T., Bartell, R.J. Krizo, M.J. Caylor, G.L. Moore, K.P. Harris, T.R. and Cusumano, S.J. “*A First Principles Atmospheric Propagation & Characterization Tool: The Laser Environmental Effects Definition and Reference (LEEDR),*” Proc. SPIE 6878, 68780B (12 pages) SPIE Photonics West, Laser Applications in Science and Engineering (LASE), San Jose, CA, January 2008. [CDE]

FIORINO, STEVEN T., Lt Col

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, “*Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355 μm to 10.6 μm ,*” SPIE Paper (6551-03) SPIE Defense and Security Symposium 2007, Orlando, FL, April 2007. SPIE Proceedings 655104 (2007). [CDE]

Fiorino, S.T., Bartell, R.J. Krizo, M.J. Moore, K.P. and Cusumano, S.J. “*Validation of a worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths,*” Proc. SPIE 7090-70900I (12 pages), SPIE Optics and Photonics, San Diego, CA, August 2008. [CDE]

Krizo, M.J., Cusumano, S.J. Bartell, R.J. Fiorino, S.T., Bailey, W.F, Beauchamp, R.L. Marciniak, M.A. and Moore, K.P. “*A worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths,*” Proc. SPIE 6966, 696619 (12 pages) SPIE Defense and Security Symposium, Orlando, FL, March 2008. [CDE]

Fiorino, S.T., Bartell, R.J. Krizo, M.J. and Cusumano, S.J. “*Propagation variability assessments of ship defense HEL and HPM performance in worldwide maritime boundary layer environments at wavelengths of 1.0642 μm , 2.141 μm , 3.16 mm and 12.2 cm,*” Proc. SPIE 6951, 69510G (12 pages) SPIE Defense and Security Symposium, Orlando, FL, March 2008. [CDE]

Fiorino, S.T., Bartell, R.J. Krizo, M.J. Caylor, G.L. Moore, K.P. Harris, T.R. and Cusumano, S.J. “*A First Principles Atmospheric Propagation & Characterization Tool: The Laser Environmental Effects Definition and Reference (LEEDR),*” Proc. SPIE 6878, 68780B (12 pages) SPIE Photonics West, Laser Applications in Science and Engineering (LASE), San Jose, CA, January 2008. [CDE]

MARCINIAK, MICHAEL A.

Krizo, M.J., Cusumano, S.J. Bartell, R.J. Fiorino, S.T., Bailey, W.F, Beauchamp, R.L. Marciniak, M.A. and Moore, K.P. “*A worldwide physics-based high-spectral resolution atmospheric characterization and propagation package for UV to RF wavelengths,*” Proc. SPIE 6966, 696619 (12 pages) SPIE Defense and Security Symposium, Orlando, FL, March 2008. [CDE]

PERRAM, GLEN P.

G.Hager, J.McIver, D.Hostutler, G.Pitz, and G.Perram, “*A Quasi-Two Level Analytic Model For End-Pumped Alkali Metal Vapor Laser,*” SPIE Proceedings of High Energy Laser Ablation, 700528 (2008). [CDE]

Greg A. Pitz and Glen P. Perram, “*Pressure Broadening of the D1 and D2 lines in Diode Pumped Alkali Lasers,*” SPIE High Energy Laser Ablation, 700526 (2008). [CDE]

Fiorino, S.T., R.J. Bartell, G.P. Perram, M.J. Krizo, D.J. Fedyk, B.W. Wisdom, and S.J. Cusumano, “*Worldwide Estimates and Uncertainty Assessments of Laser Propagation for Diverse Geometries for Paths in the Altitude Regime of 3 km and Below at Wavelengths of 0.355 μm to 10.6 μm ,*” SPIE Defense and Security Symposium Proceedings 655104 (2007). [CDE]

6.2.5. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

CUSUMANO, SALVATORE J.

Fiorino, S.T., Bartell, R.J. Krizo, M.J., Moore, K.P. and Cusumano, S.J. “*Comparison of a Worldwide, Hyperspectral Atmospheric Characterization Package to Measurements and MODTRAN,*” 30th Review of Atmospheric Transmission Models Meeting, Lexington, MA, 10-12 June 2008. [CDE]

Bartell, R.J., Fiorino, S.T. Krizo, M.J. and Cusumano, S.J. “*Comparison of HEL Effective Range and Target Tracking Range as a Function of Aperture Diameter Over Diverse Low Altitude Scenarios,*” DEPS 6th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2008. [CDE]

FIORINO, STEVEN T., Lt Col

Fiorino, S.T., Bartell, R.J. ,Krizo, M.J. Moore, K.P. and Cusumano, S.J. “*Comparison of a Worldwide, Hyperspectral Atmospheric Characterization Package to Measurements and MODTRAN,*” 30th Review of Atmospheric Transmission Models Meeting, Lexington, MA, 10-12 June 2008. [CDE]

Bartell, R.J., Fiorino, S.T. Krizo, M.J. and Cusumano, S.J. “*Comparison of HEL Effective Range and Target Tracking Range as a Function of Aperture Diameter Over Diverse Low Altitude Scenarios,*” DEPS 6th Annual Directed Energy Professional Society Modeling and Simulation Conference, Monterey, CA, March 2008. [CDE]

RUSSELL, TIMOTHY, H., Maj

Massey, S. M., Spring, J. B., and Russell, T. H., “*Continuous wave stimulated Brillouin scattering phase conjugation in step index optical fibers,*” Solid State and Diode Laser Technology Review, Albuquerque, NM, 2-5 June 2008. [CDE]

SCHMIDT, JASON D., Maj

Louthain, J. A., and Schmidt, J. D., “Integrated Approach to Airborne Laser Communication,” Optics in Atmospheric Propagation and Adaptive Systems. *Proc. SPIE.* September 2008. [CDE]

Vitayaudom, K. P., Vincent, T. R., Schmidt, J. D., and Sanchez, D. J., “Analysis of Non-Uniform Gain for Control of a Deformable Mirror in an Adaptive-Optics System,” Advanced Wavefront Control: Methods, Devices, and Applications VI. *Proc. SPIE.* August 2008. [CDE]

Plourde, M. D., and Schmidt, J. D., “Limitations of Segmented Wavefront Control Devices in Emulating Optical Turbulence,” Advanced Wavefront Control: Methods, Devices, and Applications VI. *Proc. SPIE.* August 2008. [CDE]

6.3. CENTER FOR CYBERSPACE RESEARCH

Center for Cyberspace Research (CCR)

Director 255-6565 x4278

Associate Director 255-6565 x4445

Executive Program Coordinator 255-3636 x4602

Homepage: <http://www.afit.edu/ccr/>

6.3.1. FUNDED RESEARCH PROJECTS

BALDWIN, RUSTY O.

“Emerging Technologies (IA).” Sponsor: NSA. Funding: \$87,084. [CCR]

GRIMAILA, MICHAEL R.

“Towards Real-Time Cyber Incident Mission Impact Assessment.” Sponsor: AFRL/RH. Funding: \$25,000. [CCR]

McDONALD, J. TODD, Lt Col

“Architectural Framework for Evaluating General, Efficient, and Measurable Program Protection.” Sponsor: AFOSR. Funding: \$27,661. [CCR]

“Cyber Defense Applications Using Polymorphic Dynamic Decoy Network Topology.” Sponsor: 8AF/CYBER (P). Funding: \$50,000. [CCR]

MILLS, ROBERT F.

“Technical Support, Information/Cyber Operations.” Sponsor: AFIOC. Funding: \$25,010. [CCR]

MULLINS, BARRY E.

“Air Force Communications Systems Modeling.” Sponsor: AFCA. Funding: \$19,520. [CCR]

“Ground Mobility Objective Gateways.” Sponsor: AFRL/RW. Funding: \$25,000. [CCR]

“Technical Support: Cyber Operations.” Sponsor: AFRL/RI. Funding: \$20,000. [CCR]

RAINES, RICHARD A.

“Target Discovery, Sensor Fusion, and Mitigation Analysis.” Sponsor: AFRL/RY. Funding: \$60,000. [CCR]

TEMPLE, MICHAEL A.

“EME Characterization and Exploitation.” Sponsor: Naval Surface Warfare Center (NSWC). Funding: \$73,549. [CCR]

“Technical Support: Opportunistic Channel Access.” Sponsor: Laboratory for Telecommunications Sciences. Funding: \$47,480. [CCR]

WILLIAMS, PAUL D., Maj

“AFIT Support for AFRL Cybercraft Project.” Sponsor: AFOSR. Funding: \$50,000. [CCR]

“Support to JCTD Vulnerability Assessment.” Sponsor: JIOWC. Funding: \$25,000. [CCR]

6.3.2. FUNDED EDUCATIONAL PROJECTS

RAINES, RICHARD A.

“AFIT Transformation Chair.” Sponsor: DoD/OSD. Funding: \$200,000. [CCR]

“Anti-Tamper Software Protection Initiative Education, Outreach and Research.” Sponsor: AFRL/R.Y.
Funding: \$200,000. [CCR]

“Development of a Federal Cyber Force at the Air Force Institute of Technology.” Sponsor: NSF. Funding: \$528,424. [CCR]

“IASP Tuition and Resource Support for the AFIT Center for Cyberspace Research.” Sponsor: NSA.
Funding: \$312,848. [CCR]

6.3.3. REFEREED JOURNAL PUBLICATIONS

BALDWIN, RUSTY O.

Mann, C. R., Baldwin, R. O., Kharoufeh, J. P., and Mullins, B. E., “A Queueing Approach to Optimal Resource Replication in Wireless Sensor Networks,” *Performance Evaluation*, Vol. 65, No. 10, pp. 689-700, October 2008. [CCR]

Phillips, A. N., Mullins, B. E., Raines, R. A., and Baldwin, R. O., “A Secure Group Communication Architecture for Autonomous Unmanned Aerial Vehicles,” *Security and Communication Networks*, John Wiley and Sons, DOI: 10.1002/sec.55, pp. 1-15, 28 August 2008. [CCR]

Marsh, D. W., Baldwin, R. O., Mullins, B. E., Mills, R. F., and Grimaila, M. R., “A Security Policy Language for Wireless Sensor Networks,” *Journal of Systems and Software*, Vol. 82, No. 1, pp. 101-111, January 2009. [CCR]

Peterson, G. L., Raines, R. A., and Baldwin, R. O., “Digital Forensics Educational Needs in the Miami Valley Region,” *Journal of Applied Security Research*, Vol. 3, No. 3-4, pp. 429-439, June 2008. [CCR]

Jordt, G. J., Baldwin, R. O., Raquet, J. F., and Mullins, B. E., “Energy Cost and Error Performance of Range-Aware, Anchor-Free Localization Algorithms,” *Ad hoc Networks*, Vol. 6, No. 4, pp. 539-559, June 2008. [CCR]

Mann, C. R., Baldwin, R. O., Kharoufeh, J. P., and Mullins, B. E., “Energy-efficient Agent Replication for Finite-lifetime Resources in Wireless Sensor Networks with Time-constrained Queries,” *Mobile Computing and Communications Review*, Vol. 12, No. 2, pp. 31-39, April 2008. [CCR]

Dube, T. E., Birrer, B. D., Raines, R. A., Baldwin, R. O., Mullins, B. E., Bennington, R. F., and Reuter, C. E., “Hindering Reverse Engineering: Thinking Outside the Box,” *IEEE Security and Privacy*, Vol. 6, No. 2, pp. 58-65, March/April 2008. [CCR]

GRMAILA, MICHAEL R.

Marsh, D.W., Baldwin, R.O., Mullins, B.E., Mills, R.F., and Grimaila, M.R., “A Security Policy Language for Wireless Sensor Networks,” *Journal of Systems and Software*, Vol. 82, No. 1, May 2009, pp. 101-111. [CCR]

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RAINES, RICHARD A.

Peterson, G. L., Raines, R. A., and Baldwin, R. O., "Digital Forensics Educational Needs in the Miami Valley Region," *Journal of Applied Security Research*, Vol. 3, No. 3-4, pp. 429-439, June 2008. [CCR]

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6.3.4. REFEREED CONFERENCE PUBLICATIONS

REFEREED CONFERENCE PAPERS BASED ON FULL PAPER REVIEW

BALDWIN, RUSTY O.

Kelly, D. J., Raines, R. A., Baldwin, R. O., Mullins, B. E., and Grimaila, M. R., "A Framework for Classifying Anonymous Networks in Cyberspace," *Proceedings of the International Conference on Information Warfare and Security (ICIW 2008)*, Athens, Greece, June 2008, pp. 221-232. [CCR]

Kelly, D. J., Raines, R. A., Baldwin, R. O., Mullins, B. E., and Grimaila, M. R., "Analyzing Anonymity in Cyberspace," *3rd International Conference on Information Warfare and Security*, Omaha NE, 24-25 April 2008, pp. 233-244. [CCR]

Gorsuch, J. E., Mullins, B. E., Raines, R. A., and Baldwin, R. O., "Analysis of Routing Worm Infection Rates on an IPv4 Network" *3rd International Conference on Information Warfare and Security*, Omaha NE, 24-25 April 2008, pp. 143-152. [CCR]

Hubenko, V. P., Raines, R. A., Baldwin, R. O., Mullins, B. E., Mills, R. F., and Grimaila, M. R., "A Secure and Efficient Satellite-based Multicast Architecture," *2008 IEEE Radio and Wireless Symposium*, Orlando, FL, January 2008, pp. 227-230. Finished 3rd place in "Best Student Paper" competition. [CCR]

GRAMAILA, MICHAEL R.

Grimaila, M.R., Mills, R.F., and Fortson, L.W., "An Automated Information Asset Tracking Methodology to Enable Timely Cyber Incident Mission Impact Assessment," *Proceedings of the 2008 International Command and Control Research and Technology Symposium (ICCRTS 2008)*, 17-19 June 2008, Bellevue, WA. [CCR]

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- Hellesen, D., Grimaila, M.R., Fortson, L.W., and Mills, R.F., "Information Asset Value Quantification," *Proceedings of the 2008 International Conference on Information Warfare and Security (ICIW 2008)*, 24-25 April 2008, Peter Kiewit Institute, University of Nebraska Omaha NE. [CCR]
- Sorrels, D., Grimaila, M.R., Fortson, L.W., and Mills, R.F., "An Architecture for Cyber Incident Mission Impact Assessment (CIMIA)," *Proceedings of the 2008 International Conference on Information Warfare and Security (ICIW 2008)*, 24-25 April 2008, Peter Kiewit Institute, University of Nebraska Omaha NE. [CCR]
- Strouble, D. and Grimaila, M.R., "Legal Aspects of Warfare in Cyberspace," *Proceedings of the 2008 International Conference on Information Warfare and Security (ICIW 2008)*, 24-25 April 2008, Peter Kiewit Institute, University of Nebraska Omaha NE. [CCR]
- Carls, J., Raines, R.A., Grimaila, M.R., and Rogers, S., "Biometric Security Enhancements Through Template Aging matching Score Analysis," *Proceedings of the 2008 International Conference on Information Warfare and Security (ICIW 2008)*, 24-25 April 2008, Peter Kiewit Institute, University of Nebraska Omaha NE. [CCR]
- Scheeres, J., Mills, R., and Grimaila, M.R., "Establishing the Human Firewall: Improving Resistance to Social Engineering Attacks," *Proceedings of the 2008 International Conference on Information Warfare and Security (ICIW 2008)*, 24-25 April 2008, Peter Kiewit Institute, University of Nebraska Omaha NE. [CCR]
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- Kelly, D., Raines, R.A., Baldwin, R., Mullins, B., and Grimaila, M.R., "Analyzing Anonymity in Cyberspace," *Proceedings of the 2008 International Conference on Information Warfare and Security (ICIW 2008)*, 24-25 April 2008, Peter Kiewit Institute, University of Nebraska Omaha NE. [CCR]
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- Griffin, J. and Grimaila, M.R., "Insider Threats to Information Systems," *Proceedings of the 2008 Southern Association for Information Systems Conference (SAIS 2008)*, 13-15 March 2008, Virginia Commonwealth University, Richmond, VA. [CCR]
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- Hubenko, V.P., Raines, R.A., Baldwin, R.O., Mullins, B.E., Mills, R.F., and Grimaila, M.R., "A Secure and Efficient Satellite-based Multicast Architecture," *Proceedings of the 2008 IEEE Radio and Wireless Symposium*, 21-23 January 2008, Orlando FL. [CCR]
- Hubenko, V.P., Raines, R.A., Baldwin, R.O., Mullins, B.E., Mills, R.F., and Grimaila, M.R., "Applying a Secure and Efficient Low Earth Orbit Satellite-Based Multicast Architecture in a Deployed Environment," *Proceedings of the 2007 IEEE Military Communications Conference (MILCOM 07)*, 29-31 October 2007, Orlando FL. [CCR]

HOPKINSON, KENNETH M.

Wilkins, D.C., Kolbe, M.B., Raines R.A., Williams, P.D., Hopkinson, K., "Designing and Implementing a Critical Infrastructure Lab for Educational Research", *3rd International Conference on Information Warfare and Security*, Omaha, NE, USA., pp. 1-5. [CD], 24-25 April 2008. [CCR]

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MILLS, ROBERT F.

Skarda, B., Mills, R.F., McDonald, J.T., and Strouble, D., "Operationalizing Social Engineering for Offensive Cyber Operations," *13th International Command and Control Research and Technology Symposium (ICCRTS)*, Bellevue WA, (Best Student Paper: Concepts, Theory, and Policy Track), June 2008. [CCR]

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Hansen, A., Williams, P., Mills, R., "Red Flag; A Realistic Training Environment for the Future," *3rd International Conference on Information Warfare and Security (ICIW 2008)*, Omaha, NE, April 2008. [CCR]

Sorrels, D., Grimaila, M.R., Fortson, L.W., and Mills, R.F., "CIMIA: An Architecture for Near Real-Time Situational Awareness in Cyberspace," *3rd International Conference on Information Warfare and Security (ICIW 2008)*, Omaha NE, April 2008. [CCR]

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Lacey, T.H., Mills, R.F., Raines, R.A., Williams, P.D., Oxley, M.E., Bauer, K.W., and Rogers, S.K., "A Qualia Representation of Cyberspace," *Proceedings of the SPIE Conference*, Vol. 6964, 69640C, April 11, 2008. [CCR]

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Gorsuch, J. E., Mullins, B. E., Raines, R. A., and Baldwin, R. O., "Analysis of Routing Worm Infection Rates on an IPv4 Network" *3rd International Conference on Information Warfare and Security*, Omaha NE, pp. 143-152, 24-25 April 2008. [CCR]

Kelly, D. J., Raines, R. A., Baldwin, R. O., Mullins, B. E., and Grimaila, M. R., "Analyzing Anonymity in Cyberspace," *3rd International Conference on Information Warfare and Security*, Omaha NE, pp. 221-232, 24-25 April 2008. [CCR]

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Hubenko, V. P., Raines, R. A., Baldwin, R. O., Mullins, B. E., Mills, R. F., and Grimaila, M. R., "A Secure and Efficient Satellite-based Multicast Architecture," *IEEE Radio and Wireless Symposium 2008*, Orlando FL, pp. 227-230, Third place in Best Student papers, 21-23 January 2008. [CCR]

Hubenko, V. P., Raines, R. A., Baldwin, R. O., Mullins, B. E., Mills, R. F., and Grimaila, M. R., "Applying A Secure And Efficient Low Earth Orbit Satellite-Based Multicast Architecture in a Deployed Environment," *MILCOM 2007*, Orlando FL, pp. 1-7, October 2007. [CCR]

RAINES, RICHARD A.

Carls, J. W., Raines, R. A., Grimaila, M. R., and Rogers, S. K., "Biometric Enhancements: Template Aging Error Score Analysis," *IEEE Biometrics Symposium*, Amsterdam, Netherlands, September 2008. [CCR]

McDonald, J. T., Raines, R. A., Kurkowski, S., and Bennington, R. W., "Practical Methods for Software Security Education," *Faculty Workshop on Secure Software Development*, Orlando, FL, pp. 1-5 (CD), April 2008. [CCR]

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Kelly, D. J., Raines, R. A., Baldwin, R. O., Mullins, B. E., and Grimaila, M. R., "A Framework for Classifying Anonymous Networks in Cyberspace," *3rd International Conference on Information Warfare and Security*, Omaha NE, pp 1-5 (CD), April 2008. [CCR]

Carls, J. W., Raines, R. A., Grimaila, M. R., and Rogers, S. K., "Biometric Security Enhancements Through Template Aging Matching Score Analysis," *3rd International Conference on Information Warfare and Security*, Omaha NE, pp 1-5 (CD), April 2008. [CCR]

Lacey, T. H., Mills, R. F., Raines, R. A., and Rogers, S. K., "Towards A Qualia Representation of Cyberspace," *2nd annual Defense and Security Symposium's "Evolutionary and Bio-Inspired Computation: Theory and Application (EBICOMP) II" Conference*, February 2008. [CCR]

Hubenko, V. P., Raines, R. A., Baldwin, R. O., Mullins, B. E., Mills, R. F., and Grimaila, M. R., "A Secure and Efficient Satellite-based Multicast Architecture," *IEEE Radio and Wireless Symposium*, 3rd Place Best Student Papers, Orlando FL, January 2008. [CCR]

Hubenko, V. P., Raines, R. A., Baldwin, R. O., Mullins, B. E., Mills, R. F., and Grimaila, M. R., "Applying a Secure and Efficient Low Earth Orbit Satellite-Based Multicast Architecture in a Deployed Environment," *IEEE Military Communications Conference (MILCOM)*, Orlando FL, pp 1-7 (CD), October 2007. [CCR]

Roberts, M. L., Temple, M. A., Mills, R. F., and Raines, R. A., "An SMSE Implementation of CDMA with Partial Band Interference Suppression," *2007 IEEE Global Communications Conference (GLOBECOM)*, Washington DC, pp. 1-6 (CD), October 2007. [CCR]

Lacey, T. H., Mills, R. F., Raines, R. A., Williams, P. D., and Rogers, S.K., "A Qualia Framework for Awareness in Cyberspace," *2007 IEEE Military Communications Conference (MILCOM)*, Orlando FL, pp 1-6 (CD), October 2007. [CCR]

STROUBLE, DENNIS D.

Strouble, D. and Grimaila, M.R., "Legal Aspects of Warfare in Cyberspace," *Proceedings of the 2008 International Conference on Information Warfare and Security (ICIW 2008)*, 24-25 April 2008, Peter Kiewit Institute, University of Nebraska Omaha NE. [CCR]

Nicholson, B., Grimaila, M.R., Strouble, D., "Electronic Medical Record (EMR) Informatics Security," *Proceedings of the 2008 Southern Association for Information Systems Conference (SAIS 2008)*, 13-15 March 2008, Virginia Commonwealth University, Richmond, VA (Nominated for Best Paper Award). [CCR]

6.3.5. OTHER PUBLICATIONS, PRESENTATIONS AND PROFESSIONAL ACTIVITIES

MULLINS, BARRY E.

Augeri, C. J. , Mullins, B. E., Baldwin, R. O., Bulutoglu, D. A., and. Baird, L. C., “On Some Results in Unmanned Aerial Vehicle Swarms,” *presented at the Weekly Mathematics Colloquium, Department of Mathematics, University of Dayton*, Dayton, OH, 17 April 2008. [CCR]

Augeri, C. J., Mullins, B. E., Baird, L. C., Bulutoglu, D. A., and Baldwin, R. O., “Linear Systems and k-Dimensional Weisfeiler-Lehman Stabilization,” *presented at the Discrete Mathematics Seminar, Department of Mathematics, Wright State University*, Dayton, OH, 10 January 2008. [CCR]

SAVILLE, MICHAEL A., Maj

Özer, S. , Saville, M. A., Collins, P. J., Terzuoli, A. J., and Martin, R. K., "Modeling of a Strike Formation with Coherent Self-protection Jammers," *IEEE Radar Conference*, Rome, Italy, 26-30 May 2008. [CCR]

Townsend, J., Saville, M. A., Hong, S. M., and Martin, R. K., "Simulator for Velocity Gate Pull-Off Electronic Countermeasure Techniques," *IEEE Radar Conference*, Rome, Italy, 26-30 May 2008. [CCR]

Townsend, J., Saville, M. A., Hong, S. M., Mayhew, O P., and Simpson, C., "Waveform Optimization for Electronic Countermeasure Technique Generation," *IEEE Radar Conference*, Rome, Italy, 26-30 May 2008. [CCR]

Hong, S., Longbrake, M., Saville, M., and Wu, Z., "Non-coherent Cooperative Jammer for Multi-Platform Applications," *IEEE Radar Conference*, Rome, Italy, 26-30 May 2008. [CCR]

6.3.6. BOOKS AND CHAPTERS IN BOOKS

RAINES, RICHARD A.

Wilkin, D. C., Raines, R. A., Williams, P. D., and Hopkinson, K., “Cyberspace Policies and Politics for Critical Infrastructure,” *Critical Infrastructure Protection II*, S. Sheno, and M. Goetz, eds., Springer Science+Business Media, New York, NY, Chapter 2, pp. 17-30, 2008. [CCR]

Todd, A. D., Benson, J. A., Peterson, G. L., Franz, T. P., Stevens, M. R., and Raines, R. A., "An Analysis of Forensic Tools in Detecting Rootkits and Hidden Processes," *Advances in Digital Forensics III*, S. Sheno, and P. Craiger, eds., Springer Science+Business Media, New York, NY, pp. 89-106, 2007. [CCR]

6.4. CENTER FOR MASINT STUDIES AND RESEARCH

Center for MASINT Studies and Research [CMSR]

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Homepage: <http://www.afit.edu/cmsr/>

6.4.1. FUNDED RESEARCH PROJECTS

BUNKER, DAVID J.

“ONIR Ground Truth.” Sponsor: NASIC. Funding: \$140,160. [CMSR]

GROSS, KEVIN C.

“Novel use of Advanced Sensors for Battlespace Characterizations.” Sponsor: SAF. Funding: \$49,000. [CMSR]

TERZUOLI, ANDREW J., Jr.

“Remote Sensing and Communication for MASINT.” Sponsor: NASIC. Funding: \$150,000. [CMSR]

TUTTLE, RONALD F.

“Advanced Technical Intelligence Research Support.” Sponsor: NASIC. Funding: \$114,576. [CMSR]

“Advanced Sensor Integration Study.” Sponsor: OSD. Funding: \$14,000. [CMSR]

“Integration of a Sensor Package for Identifying Radical Extremist (INSPIRE).” Sponsor: West Virginia High Technology Consortium (WVHTC). Funding: \$44,308. [CMSR]

6.4.2. FUNDED EDUCATIONAL PROJECTS

TUTTLE, RONALD F.

“Advanced Geospatial Intelligence Education.” Sponsor: NGA. Funding: \$756,000. [CMSR]

6.4.3. REFEREED CONFERENCE PUBLICATIONS

REFEREED CONFERENCE PAPERS BASED ON FULL PAPER REVIEW

GROSS, KEVIN C.

Kevin C. Gross, Joseph Wymann, and Glen P. Perram, “*Phenomenological Fireball Model for Remote Identification of High-Explosives*,” SPIE Proceedings Defense and Security Symposium, 656613 (2007). [CMSR]

PERRAM, GLEN P.

Bill Smith, Sr., Stanislav Kireev, Leanne West, Gary Gimmetstad, Larry Cornman, Wayne Feltz, Glen Perram, Taumi Daniels, “*Interferometric radiometer for in-flight detection of aviation hazards*,” SPIE Proceedings of Optical Engineering and Applications, 70880A (2008). [CMSR]

Kevin C. Gross, Joseph Wymann, and Glen P. Perram, “*Phenomenological Fireball Model for Remote Identification of High-Explosives*,” SPIE Proceedings Defense and Security Symposium, 656613 (2007). [CMSR]

Michael Hawks and Glen P. Perram, “*Passive Ranging of Boost Phase Missiles*,” SPIE Proceedings Defense & Security Symposium, Acquisition, Tracking, Pointing, and Laser Systems Technologies XXI, 65690G (2007). [CMSR]

TUTTLE, RONALD, L.

K. Graham, R. Tuttle, and J. Jordan, “*A Cognitive Analytical Approach: Identification of Problem Complexity, Indicators, and the Need for Signatures to Reveal Foreign Denial and Deception*,” The 76th Proceedings of the Military Operations Research Society Symposium, 10-12 June 2008, United Coast Guard Academy, New London, CT, USA. [CMSR]

6.4.4. OTHER PRESENTATIONS, PUBLICATIONS AND PROFESSIONAL ACTIVITIES

BUNKER, DAVID, J.

Kevin C. Gross, Glen P. Perram, Ronald F. Tuttle, David J. Bunker, “*Using fireball phenomenology to assess the applicability of current and future BATTLESPACE sensors to the C-IED fight*” JIEDDO IPT Meeting, Scitor, Chantilly, VA, 25–26 March 2008. [CMSR]

GROSS, KEVIN, C.

Gross, Kevin C. and Perram, Glen P. “*Mid Infrared Imaging FTIR for Battlespace Combustion Events*” Telops Scientific Workshop 2008, Washington, DC, 25-26 September 2008. [CMSR]

Bradley Kenneth, Gross, Kevin and Perram, Glen “*Imaging Fourier Transform Spectrometry (IFTS) of Combustion Events with the Telops FIRST-MW*” 2008 International Symposium on Spectral Research Meeting, Hoboken, NJ, June 23-27, 2008. [CMSR]

Steward, B. J. Sinha, N. DeMagistris, M. Gross, K. C., and Perram, G. P. “*Iron Rose 2 Ground Truth and Modeling Review*” 55th Joint Army-Navy-NASA-Air Force (JANNAF) Propulsion Meeting, Boston, MA 12-16 May 2008. [CMSR]

Gross, Kevin C. Perram, Glen P. Tuttle, Ronald F. Bunker, David J. “*Using fireball phenomenology to assess the applicability of current and future BATTLESPACE sensors to the C-IED fight*” JIEDDO IPT Meeting, Scitor, Chantilly, VA, 25–26 March 2008. [CMSR]

PERRAM, GLEN, P.

Gross, Kevin C. and Perram, Glen P. “*Mid Infrared Imaging FTIR for Battlespace Combustion Events*” Telops Scientific Workshop 2008, Washington, DC, 25-26 September 2008. [CMSR]

Bradley Kenneth, Gross, Kevin and Perram, Glen, “*Imaging Fourier Transform Spectrometry (IFTS) of Combustion Events with the Telops FIRST-MW*” 2008 International Symposium on Spectral Research Meeting, Hoboken, NJ, June 23-27, 2008. [CMSR]

Steward, B. J. Sinha, N. DeMagistris, M. Gross, K. C., and Perram, G. P. “*Iron Rose 2 Ground Truth and Modeling Review*” 55th Joint Army-Navy-NASA-Air Force (JANNAF) Propulsion Meeting, Boston, MA 12-16 May 2008. [CMSR]

Gross, Kevin C. Perram, Glen P. Tuttle, Ronald F. Bunker, David J. “*Using fireball phenomenology to assess the applicability of current and future BATTLESPACE sensors to the C-IED fight*” JIEDDO IPT Meeting, Scitor, Chantilly, VA, 25–26 March 2008. [CMSR]

TUTTLE, RONALD, L.

Gross, Kevin C. Perram, Glen P. Tuttle, Ronald F. Bunker, David J. *“Using fireball phenomenology to assess the applicability of current and future BATTLESPACE sensors to the C-IED fight”* JIEDDO IPT Meeting, Scitor, Chantilly, VA, 25–26 March 2008. [CMSR]

6.5. CENTER FOR OPERATIONAL ANALYSIS

Center for Operational Analysis (COA)

Director 255-6565 x4538

Projects Director 255-6565 x4251

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6.5.1. FUNDED RESEARCH PROJECTS

BAUER, KENNETH W., Jr.

“Sensor Fusion for Automatic Target Recognition (Combat ID Research).” Sponsor: ACC. Funding: \$33,000. [COA]

CHAMBAL, STEPHEN P., Lt Col

“COA Support.” Sponsor: AFMC/A9. Funding: \$175,000. [COA]

MILLER, JOHN O.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$346,910. [COA]

“Air Force Standard Analysis Toolkit (AFSAT) Support.” Sponsor: AF/A9. Funding: \$35,000. [COA]

MOORE, JAMES T.

“Application of Metaheuristics to Air Force Problems.” Sponsor: AFOSR. Funding: \$51,500. [COA]

OGDEN, JEFFREY A.

“ECSS Research.” Sponsor: ECSS. Funding: \$36,293. [COA]

OXLEY, MARK E.

“Qualia Exploitation of Sensor Technology (QUEST) for Structural Health Management.” Sponsor: AFRL/RB. Funding: \$8,000. [COA]

PETERSON, GILBERT L.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$110,800. [COA]

WEIR, JEFFERY D., Lt Col

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$11,700. [COA]

6.5.2. REFEREED JOURNAL PUBLICATIONS

BAUER, KENNETH W., Jr.

Bednar, E.M., Bauer, K.W., and Miller, J.O., “Use of Control Variates in a Large-Scale Aggregated Combat Model”, *Journal of Defense Modeling and Simulation*, 4(1):29-42 (2007). [COA]

Laine, T. I. and Bauer, K.W., "A mathematical framework to optimize ATR systems with non-declarations and sensor fusion", *Computers & Operations Research*, 35(6):1789-1812 (2008). [COA]

CHRISSIS, JAMES W.

Abramson, M., Audet, C. Chrissis, J., and Walston, J., "Mesh Adaptive Direct Search Algorithms for Mixed Variable Optimization", *Optimization Letters*, 3(1): 35-47 (available online 2008). [COA]

Y. Chan , J. Mahan , J. Chrissis, D. Drake, and D. Wang, "Hierarchical Maximal-Coverage Location-Allocation Case of Generalized Search-and-Rescue", *Computers and Operations Research*, vol. 35, no. 6, June 2008, pp.1886-1904. [COA]

COCHRAN, JEFFERY K.

Cochran, J.K. and Kaylani, H., "Optimal Design of a Hybrid Push/Pull Serial Manufacturing System with Multiple Part Types", *International Journal of Production Research* 46(4): 949-965 (2008). [COA]

Cochran, J.K. and Roche, K.T., "A Queuing-Based Methodology for Hospital Inpatient Bed Planning", *Journal of the Operational Research Society* 59(11): 1471-1482 (2008). [COA]

COOPER MARTHA C.

Charvet F., Cooper, M.C., and Gardner, J. "The Intellectual Structure of Supply Chain Management: A Bibliometric Approach", *Journal of Business Logistics*, 29(1): 47-73 (2008). [COA]

CUNNINGHAM, WILLIAM A.

Heilmann, S., Cunningham, W. A. and Ward, C., "User Perceptions of In-Transit Visibility Architecture Utility", *Air Force Journal of Logistics*, 32(2): 92-99 (2008). [COA]

HILL, RAYMOND R.

Marsh, W. E. and Hill, R.R., "An Initial Agent Behavior Modeling and Definition Methodology as Applied to Unmanned Aerial Vehicle Simulations", *International Journal of Simulation and Process Modeling*, 4(2): 119-129 (2008). [COA]

Cho, Y. K., Moore, J.T., Hill, R.R. and Reilly, C. H., "Exploiting Empirical Knowledge for Bi-Dimensional Knapsack Problem Heuristics", *International Journal of Industrial and Systems Engineering*, 3(5): 530-548 (2008). [COA]

Hiremath, C.S. and Hill, R.R., "New Greedy Heuristics for the Multiple-Choice Multidimensional Knapsack Problem", *International Journal of Operational Research*, 2(4): 495-512 (2008). [COA]

JOHNSON, ALAN W.

Maynard, T., Bell, J. and Johnson, A., "Frustrated Hazardous Material: Military and Commercial Training Implications", *Transportation Journal* 47(1): 30-42 (2008). [COA]

MOORE, JAMES T.

Cho, Y. K., Moore, J.T., Hill, R.R. and Reilly, C.H., "Exploiting Empirical Knowledge for Bi-Dimensional Knapsack Problem Heuristics", *International Journal of Industrial and Systems Engineering*, 3(5): 530-548 (2008). [COA]

6.5.3. REFEREED CONFERENCE PUBLICATIONS

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

BAUER, KENNETH W., Jr.

Oxley, M.E., Thorsen, S.N., Schubert, C.M., and Bauer, K.W., "The Evaluation of an ATR System via its ROC Manifold", *11th International Conference on Information Fusion (FUSION 2008)*, June – July 2008 Cologne, Germany. [COA]

Lacey, T.H., Mills, R.F., Raines, R. A., Williams, P. D., Oxley, M.E., Bauer, K.W. and Rogers, S.K., "A Qualia Representation of Cyberspace", *Proceedings of the International Society for Optical Engineering (SPIE) Conference*, April 2008. [COA]

Rogers, S. K., Sadowski, C., Bauer, K. W., Oxley, M. E., Kabrisky, M., Rogers, A. S. and Mott, S. D., "The life and death of ATR/Sensor Fusion and the hope for resurrection" , *Proceedings of SPIE*, March 2008. [COA]

Turnbaugh, M.A. and Bauer, K.W., "HRR Signature Classification using Syntactic Pattern Recognition", *IEEE Aerospace Conference*, March 2008, Big Sky, Montana, USA. [COA]

Turnbaugh, M.A. and Bauer, K.W., "HRR Signature Classification using a Hybrid Composite Classification System", *International Society for Optical Engineering (SPIE) Defense and Security Symposium*, Conference on Automatic Target Recognition XVIII, March 2008, Orlando, Florida, USA. [COA]

Leap, N.J. and Bauer, K.W., "A Confidence Paradigm for Classification Systems," *Proceedings of SPIE – Volume 6968, Signal Processing, Sensor Fusion, and Target Recognition XVII*, Editor: Ivan Kadar, March 2008. [COA]

Friend, M. A. and Bauer, K.W., "Non-Declaration Measures for Classifier Accuracy", *Proceedings of the Artificial Neural Networks in Engineering Conference (ANNIE 2006)*, November 2007, St. Louis, Missouri, USA. [COA]

Rodriguez, J., Miller, J.O., Bauer, K.W. Jr., and Neher, R.E. Jr., "Methodologies for Aggregating Large Hierarchical Simulation Models" *Proceedings of SPIE Vol 6965-11*, 2008. [COA]

Rodriguez, J., Bauer, K.W. Jr., Miller, J.O., and Neher, R.E. Jr., "Building Prediction Models of Large Hierarchical Simulation Models with Artificial Neural Networks and other Statistical Techniques." *Proceedings of SPIE Vol 6978-21*, 2008. [COA]

Leap, N. J. and Bauer, K.W., "Confidence Framework in Classification", *Proceedings of the Artificial Neural Networks In Engineering Conference (ANNIE 2006)*, November 2007, St. Louis, Missouri, USA. [COA]

COCHRAN, JEFFERY K.

Burdick, T.L. and Cochran, J.K., "Right on 'Queue': Engineers Set the Stage for Healthcare Improvement" with Associated Paper "Forming a Healthcare Engineering Partnership: The Banner Health / Arizona State University Experience", *HIMSS Conference & Exhibition*, 2008, Orlando, Florida, USA. [COA]

COOPER, MARTHA C.

Cooper, M. C., Helper, A., and Ogden, J., "Evaluating the Effectiveness of Balanced Score Card Implementations", *2008 SOLE Symposium*, August 2008, Orlando, Florida, USA. [COA]

Cooper, M.C., Helper, A. and Ogden, J., "Business Methods Applied in Government", *2008 POMS Conference*, May 2008, La Jolla, California, USA. [COA]

Burgos-Dominguez, A., Cartwright, H., Cooper, M. C. and Hurst, D., "Women in Logistics 2007: A Global Perspective", *Council of Supply Chain Management Professionals Annual Meeting*, October, 2007, San Antonio, Texas, USA. [COA]

HILL, RAYMOND R.

Hardman, N., Colombi J., Jacques, D. and Hill, R.R., "Improved User Interface Design through Graph-Theoretic Modeling", *2008 IEEE International Conference on Distributed Human-Machine Systems*, March 2008, Athens, Greece. [COA]

Champagne, L.E., and Hill, R.R., "Agent-Model Validation Based on Historical Data" *Proceedings of the 2007 Winter Simulation Conference*, Institute of Electrical and Electronics Engineers, December 2007, Washington, DC, USA. [COA]

JOHNSON, ALAN W.

Cole, G., Johnson, A.W., and Miller, J.O., "Feasibility Study of Variance Reduction in the Logistics Composite Model", *Proceedings of the Winter Simulation Conference*, December 2007, Washington, DC, USA. [COA]

MILLER, JOHN O.

Miller, J.O., "Tutorial: Military Applications of Modeling and Simulation", *Proceedings of the Industrial Engineering Research Conference 2008*, May 2008, Vancouver, B.C. Canada. [COA]

Rodriguez, J., Miller, J.O., Bauer, K.W. Jr., and Neher, R.E. Jr., "Methodologies for Aggregating Large Hierarchical Simulation Models" *Proceedings of SPIE Vol 6965-11*, 2008. [COA]

Rodriguez, J., Bauer, K.W. Jr., Miller, J.O., and Neher, R.E. Jr., "Building Prediction Models of Large Hierarchical Simulation Models with Artificial Neural Networks and other Statistical Techniques." *Proceedings of SPIE Vol 6978-21*, 2008. [COA]

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF ABSTRACT REVIEW

HALL, SHANE N., Maj

Jacobson, S. H., Sewell, E. C. and Hall, S. N., "Analyzing the General Minimum Cost Vaccine Formulary Selection Problem," *Proceedings of the 2008 NSF Design, Service, and Manufacturing Grantees and Research Conference*, Knoxville, Tennessee, January 2008. [COA]

Kappedal, R., Roesener, A. G. and Hall, S. N., "Intelligence Surveillance and Reconnaissance Asset Assignment for Optimal Mission Effectiveness", *Military Operations Research Society Symposium*, United States Coast Guard Academy, Connecticut, June 2008. [COA]

Illig, A.A., Roesener, A.G., Knighton, S. A. and Hall, S. N., "Hurry Up and Wait ...Optimizing the Initial Skills Training Scheduling Process", *Military Operations Research Society Symposium*, United States Coast Guard Academy, Connecticut, June 2008. [COA]

HILL, RAYMOND R.

Miller, J. O. and Hill, R.R., "Military Applications of Modeling and Simulation", *Proceedings of the 2008 Industrial Engineering Research Conference*, Vancouver, BC, May 2008. [COA]

Heath, B. L. and Hill, R.R., "The Early History of Agent-Based Modeling", *Proceedings of the 2008 Industrial Engineering Research Conference*, Vancouver, BC, Canada, May 2008. [COA]

JOHNSON, ALAN W.

Johnson, A.W. and Servidio, J., “Ground Support Process Time Refinement for Reusable Launch Vehicle Regeneration Modeling”, *Proceedings of the American Institute of Aeronautics and Astronautics Space 2008 Conference*, San Diego California, AIAA-2008-7647. [COA]

PETTIT, TIMOTHY, J., Lt Col

Pettit, T.J., “Ensuring Supply Chain Resilience,” presentation at the 43rd *Annual International Logistics Conference and Exhibition, The International Society of Logistics (SOLE)*, Orlando, Florida, August 2008. [COA]

6.5.4. BOOKS AND CHAPTERS IN BOOKS

BAUER, KENNETH W., Jr.

Rodriguez, B.M., Peterson, G.L., and Bauer, K.W., “Fusion of Steganalysis Systems Using Bayesian Model Averaging”, *Advances in Digital Forensics IV*, eds. Shenoi, S., and Ray, I. (2008). [COA]

HALL, SHANE N., Maj

Hall, S.N., Jacobson, S.H., and Sewell, E.C., “Optimizing Pediatric Vaccine Formularies”, *Optimization in Medicine and Biology*, Chapter 4, pp 117-145. Auerbach Publications (Taylor and Francis Group), (2008). [COA]

HILL, RAYMOND R.

Prabhala,S., Ganapathy, S. Narayanan, S., Gallimore, J. J. and Hill, R.R., Model-Based Simulation to Examine Command and Control Issues with Remotely Operated Vehicles. “*Simulation and Modeling: Current Technologies and Applications*”, Chapter 7, El Sheikh, A A.A., Ajeeli, R.. A. and Abu-Taieh, E. M. O. eds. IGI Publishing, Hershey, PA., 199-218, (2008). [COA]

6.6. CENTER FOR SYSTEMS ENGINEERING

Center for Systems Engineering

Education and Training Division

Homepage: <http://cse.afit.edu/>

Chief 937-255-3355 x3363

Fax 937-255-4981

6.6.1. FUNDED RESEARCH PROJECTS

HAVLICEK, JEFFREY D., Maj

“Net-Centric Joint Force Protection Values.” Sponsor: 642nd ESS. Funding: \$40,578. [CSE]

“Resourcing Global Strike or Global Persistent Attack Architecture.” Sponsor: ACC. Funding: \$28,974. [CSE]

JACQUES, DAVID R.

“AFIT Analysis Support to the Joint Improvised Explosive Device Defeat Organization.” Sponsor: JIEDDO. Funding: \$322,140. [CSE]

“Human Systems Interface Research.” Sponsor: AFRL/RH. Funding: \$30,000. [CSE]

“Space Systems Engineering Case Studies.” Sponsor: SAF. Funding: \$60,000. [CSE]

SONI, SOM R.

“Optimization of Z-Pinning Volume Fraction in Joints for Structural Integrity.” Sponsor: DAGSI. Funding: \$20,160. [CSE]

STROUBLE, DENNIS D.

“Strategic Information System Architecture.” Sponsor: HQ AFMC/A6. Funding: \$30,000. [CSE]

WALTER, JOERG D., Maj

“Impacts of Uninhabited Long-Range Strike Aircraft.” Sponsor: AFRL/RB. Funding: \$25,000. [CSE]

6.6.2. REFEREED JOURNAL PUBLICATIONS

COLOMBI, JOHN M.

Ford, T.C., Colombi, J.M., Jacques D.R., and Graham, S.R., (8 Aug 2008). “On the application of classification concepts to systems engineering design and evaluation,” *Journal of Systems Engineering*. Available: www3.interscience.wiley.com/journal/116837515/issue. [CSE]

JACQUES, DAVID R.

Ford, T.C., Colombi, J.M., Jacques D.R., and Graham, S.R., (8 Aug 2008). “On the application of classification concepts to systems engineering design and evaluation,” *Journal of Systems Engineering*. Available: www3.interscience.wiley.com/journal/116837515/issue. [CSE]

6.6.3. REFEREED CONFERENCE PUBLICATIONS

CONFERENCE PAPERS ACCEPTED ON THE BASIS OF FULL PAPER REVIEW

COLOMBI, JOHN. M.

Bullard, R., Colombi, J. and Freeman, R., Global Positioning System: A Case Study Focused on Systems Engineering, Proceedings and Oral Presentation at the 19th International Conference on Systems Engineering (ICSEng), August 2008. [CSE]

Bullard, R., Colombi, J. and Freeman, R., Global Positioning System (GPS) Systems Engineering Case Study, *Proceedings and for Oral Presentation at INCOSE Symposium*, June 2008. [CSE]

Hardman N., Colombi, J., Jacques. D. and Hill, R. “Improved User Interface Design Through Graph-Theoretic Modeling”, *Proceeding of the IEEE International Conference on Distributed Human-Machine Systems*, 9-12 March 2008, Athens, Greece. Available: <http://www.action-m.com/dhms2008/> [CSE]

O’Malley, D., Zall, J., Colombi J., and Carl, J., “Integrating Cognition into System Design,” WORLDCOMP’08, World Congress in Computer Science, Computer Engineering, and Applied Computing, July 2008. [CSE]

Ford T., J. Colombi, S. Graham and D. Jacques, “Measuring System Interoperability”, 2008 Conference on Systems Engineering Research, 4-5 April 2008, Redondo Beach, CA. Available: <http://incose-la.org/events/conferences/cser-2008.html> [CSE]

Hardman, N., Colombi, J., Jacques, D., Miller, J., “Human Systems Integration within the DoD Architecture Framework”, *Proceedings of the 2008 Industrial Engineering Research Conference*, J. Fowler and S. Mason, eds., April 2008. [CSE]

JACQUES, DAVID R.

Hardman N., Colombi, J., Jacques. D. and Hill, R. “Improved User Interface Design Through Graph-Theoretic Modeling”, *Proceeding of the IEEE International Conference on Distributed Human-Machine Systems*, 9-12 March 2008, Athens, Greece. Available: <http://www.action-m.com/dhms2008/> [CSE]

Hardman N., J. Colombi, D. Jacques and J. Miller, “Human Systems Integration within the DoD Architecture Framework”, 2008 Industrial Engineering Research Conference, Canada, 17-21 May 2008, Vancouver, British Columbia. [CSE]

Ford T., J. Colombi, S. Graham and D. Jacques, “Measuring System Interoperability”, 2008 Conference on Systems Engineering Research, 4-5 April 2008, Redondo Beach, CA. Available: <http://incose-la.org/events/conferences/cser-2008.html> [CSE]

APPENDICES

APPENDIX A: FACULTY CREDENTIALS

NOTE: Additional information may be obtained from the AFIT Yellow Pages at <http://www.afit.edu/YellowPages/default.cfm>

DEPARTMENT OF AERONAUTICS AND ASTRONAUTICS

Access Phone: 937-255-3069, DSN 785-3069

Fax: 937-656-7621, DSN 986-7621

Homepage: <http://www.afit.edu/en/eny/>

BLACK, JONATHAN T., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2007 (AFIT/ENY); BS Industrial Engineering, University of Illinois at Urbana-Champaign, 2001; MS Mechanical and Aerospace Engineering, Joint Institute for Advancement of Flight Sciences (joint NASA Langley Research Center and George Washington University program), 2003; PhD Mechanical Engineering, University of Kentucky, 2006. Dr. Black's research interests include lightweight and inflatable aerospace structures, structural and nonlinear dynamics, noncontact measurement systems, and computational structural mechanics. His current work involves developing novel measurement and modeling techniques to characterize the static and dynamic behavior of new, stiff, self-deploying lightweight aerospace structures. He recently received an AFOSR Young Investigator Award. Tel. 255-3636 x4578, email: Jonathan.Black@afit.edu

BLUE, PAUL A., Maj, Instructor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2004 (AFIT/ENY); BS, University of Nebraska - Lincoln, 1993; MS, University of Minnesota - Twin Cities, 1995; PhD (ABD), University of Minnesota - Twin Cities, 2004. Maj Blue's research interests include the guidance and control of aerospace vehicles and the flight-testing of advanced control concepts. His current research is focused on guidance, navigation, and control of small unmanned aircraft systems, operator interfaces, and developing techniques to evaluate a controlled system's performance (e.g. an aircraft's handling qualities) based on the operators ability to perform a given task. Maj Blue's prior assignments include Flight Control Research Engineer at the Air Vehicles Directorate of the Air Force Research Laboratory and Exchange Engineer at the German Aerospace Center. He has several publications, including a textbook on robust control with Prof. Juergen Ackermann et al.

BRANAM, RICHARD D., Lt Col, Assistant Professor of Aeronautical Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2005 (AFIT/ENY); BS, Aerospace Engineering, The Ohio State University, 1993; MS, Aeronautical Engineering, Air Force Institute of Technology, 1997; PhD, Aerospace Engineering, The Pennsylvania State University, 2005. Major Branam's primary research areas of interest are rocket propulsion and hypersonics. Previous assignments include research scientist at the German Aerospace Center in the area of supercritical injection and as program manager of the upper stage rocket demonstration at the Air Force Research Laboratory. Tel. 937-255-3636 x7485 (DSN 785-3636 x7485), email: Richard.Branam@afit.edu

CALICO, ROBERT A., Jr., Dean Emeritus of Aerospace Engineering, AFIT Appointment Date: 1972 (AFIT/EN); BS, University of Cincinnati, 1966; MS, University of Cincinnati, 1968; PhD, University of Cincinnati, 1971. Dr. Calico's research interests include aircraft stability and control, analytical dynamics, stability of non-linear systems, satellite dynamics, control theory, and vibration analysis. Tel. 937-255-3025 (DSN 785-3025), email: Robert.Calico@afit.edu

CANFIELD, ROBERT A., Professor in Aeronautics and Astronautics, Department of Aeronautics and Astronautics, 2000 (AFIT/ENY); BSE, Mechanical Engineering, Duke University, 1983; MS, Aeronautics and Astronautics, Stanford University, 1984; PhD, Engineering Mechanics, Virginia Polytechnic Institute and State University, 1992. Dr. Canfield's research interests include structural optimization, multidisciplinary analysis and design methods, structural dynamics and controls, and aeroelasticity. He has published a book, 34 journal articles and 66 papers in conference proceedings on these topics. Dr. Canfield is the former Program Manager for Computational Mathematics at the Air Force Office of Scientific Research (AFOSR) and AFOSR Director of Policy and Integration. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics.

COBB, RICHARD G., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2001 (AFIT/ENY); BS, the Pennsylvania State University, 1988; MS, Air Force Institute of Technology, 1992; PhD, Air Force Institute of Technology, 1996. Research interests include dynamics and control of flexible space structures for remote sensing applications, system identification techniques, control of micro air vehicles, and applications of optimal control theory. Prior to teaching at AFIT, Dr. Cobb was responsible for the establishment of an Air Force wide Reliability Centered Maintenance program to enhance jet engine reliability. In recognition of his accomplishments, Dr. Cobb was selected as the 2001 Senior Military Engineer of the Year for the Aeronautical Systems Center. Prior to his assignment at WPAFB in September 1999, Dr. Cobb served as program manager for the Air Force Research Laboratory's TechSat 21 program, a revolutionary satellite technology program investigating the feasibility of using distributed micro-satellite constellations to satisfy Air Force global sensing requirements. While at Kirtland AFB NM, Dr. Cobb also served as the technical advisor for the Space Vehicles Technology Branch, and Chief of the Dynamic Systems Group. Dr. Cobb is an Associate Fellow of AIAA. Tel. 937-255-3636 x4559 (DSN 785-3636 x4559), email: Richard.Cobb@afit.edu

DECKER, DOUGLAS D., Assistant Professor of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 2008 (AFIT/ENY); BS, University of Kansas, 1987; MS, Air Force Institute of Technology, 1994; PhD, Air Force Institute of Technology, 2004. Research interests include nonlinear control, optimal control, optimization, applications of nonlinear/optimal control, astrodynamics, satellite attitude control, control of unmanned air vehicles, search theory. Previous assignments include serving as a SCRAMJET Controls Engineer, GPS Satellite Engineering Officer and Systems Analyst, and Satellite Vehicle Crew Evaluator. He is a member of Sigma Gamma Tau, Tau Beta Pi, and is a Senior Member of AIAA. Tel. 937-255-3636 x7465 (DSN 785-3636 x7465), email: Douglas.Decker@afit.edu

FRANKE, MILTON E., Professor Emeritus of Aerospace Engineering, Department of Aeronautics and Astronautics, AFIT Appointment Date: 1959 (AFIT/ENY); BME, University of Florida, 1952; MSME, University of Minnesota, 1954; PhD, The Ohio State University, 1967. Research interests include fluid transmission lines, thrust vector control, high lift aerodynamics, fluidics, cavity acoustics, thrust augmenting ejectors, heat transfer, electrostatic cooling, boundary layers, aerodynamic in-ground effects, lean aerospace initiatives, reusable launch vehicles, and engineering of complex systems. Dr. Franke has authored or co-authored over 130 technical articles. He holds five patents, was the recipient of the AFIT Charles A. Stone Award in 1986 and the AFIT Bernard A. Schriever Award in 1993. Dr. Franke is a retired colonel in the Air Force Reserve. He is chair of the Committee on Organization and Rules (a committee of the ASME Board of Governors), past Vice President for Communications of the ASME (1990-1992), past Vice President for Systems and Design of the ASME (1993-1996), co-chair of the AIAA Weapon System Effectiveness Technical Committee, a Fellow of the ASME, and Associate Fellow of the AIAA. Dr. Franke retired 31 March 2007. Tel. 937-255-3636, x 4720 (DSN 785-3636, x 4720), email: Milton.Franke@afit.edu

GREENDYKE, ROBERT B., Associate Professor of Aeronautics and Astronautics and Director, AFIT Scientist and Engineer Education Programs at Kirtland AFB; Appointment Date: 2005 (AFIT/ENY); BBA, Economics, Baylor University, 1979; BS, Aerospace Engineering, Texas A&M University, 1986; MS, Aerospace Engineering, Texas A&M University, 1988; PhD, Interdisciplinary Engineering, Texas A&M University, 1998. Dr Greendyke research interests include computational fluid dynamics, Direct Simulation Monte Carlo methods, hypersonic and reacting flows, radiation simulation, thermophysics, and plasma simulation. Dr Greendyke was a Research Scientist at NASA-Langley Research Center studying re-entry and aerobraking flows, and an Associate Professor in the University of Texas at Tyler establishing a start-up Mechanical Engineering Program from concept through accreditation. He has published over 30 journal articles, technical reports and conference publications in multiple fields. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics. Tel. 937-255-3636 x4567, email: Robert.Greendyke@afit.edu

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APPENDIX C: ABBREVIATIONS FOR ORGANIZATIONS

There are a number of abbreviations for organizations that are used in this report. This alphabetical listing includes only selected organizations.

86 th FWS	Eighty-sixth Fighter Wing Squadron
ACC	Air Combat Command
ACES	Applied Computational Electromagnetic Society
AETC	Air Education and Training Command
AFCEE	Air Force Center for Environmental Excellence
AFCESA	Air Force Civil Engineer Support Agency
AFIT	Air Force Institute of Technology
AFLMA	Air Force Logistics Management Agency
AFMC	Air Force Materiel Command
AFOTEC	Air Force Operational Test and Evaluation Center
AFRL	Air Force Research Laboratory
AFRL/AFOSR	AFRL/Air Force Office of Scientific Research
AFRL/RD	AFRL/Directed Energy Directorate
AFRL/RH	AFRL/Human Effectiveness Directorate
AFRL/RI	AFRL/Information Directorate
AFRL/RX	AFRL/Materials and Manufacturing Directorate
AFRL/RW	AFRL/Munitions Directorate
AFRL/RZ	AFRL/Propulsion Directorate
AFRL/RY	AFRL/Sensors Directorate
AFRL/RB	AFRL/Air Vehicles Directorate
AFRL/RV	AFRL/Space Vehicles Directorate
AFCA	Air Force Communication Agency
AFSA	Air Force Security Agency
AFSEO	Air Force Seek Eagle Office (46 SK/SKE)
AFSPC	Air Force Space Command
AFTAC	Air Force Technical Applications Center
AFWA	Air Force Weather Agency
AHS	American Helicopter Society
AIA	Air Intelligence Agency
AIAA	American Institute of Aeronautics and Astronautics
AMC	Air Mobility Command
ARDA	Advanced Research and Development Activity
ASME	American Society of Mechanical Engineers
ASC	Aeronautical Systems Center
AU	Air University
DAGSI	Dayton Area Graduate Studies Institute
DARPA	Defense Advanced Research Projects Agency
DETEC	Directed Energy Test and Evaluation Capability
DISA	Defense Information Systems Agency
DoD	Department of Defense
DOE	Department of Energy
DoS	Department of State
DTRA	Defense Threat Reduction Agency
IEEE	Institute of Electrical and Electronics Engineers
INCOSE	International Council on Systems Engineering
ISSMO	International Society for Structural and Multidisciplinary Optimization
MORS	Military Operations Research Society
NASA	National Aeronautics and Space Administration
NASIC	National Air and Space Intelligence Center
NSA	National Security Agency
NSF	National Science Foundation

NSSA	National Security Space Architect
NSSO	National Security Space Office
OSD	Office of the Secretary of Defense
PACAF	Pacific Air Forces
SAE	Society of Automotive Engineers
SAF	Office of the Secretary of the Air Force
SPIE	The International Society for Optical Engineering
USSTRATCOM	United States Strategic Command
USAF	United States Air Force
USNA	United States Naval Academy
USSOCOM	United States Special Operations Command
USTRANSCOM	United States Transportation Command
WPAFB	Wright-Patterson Air Force Base

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